The MINING CONGRESS JOURNAL

With this issue we present the *greater* Mining Congress Journal . . . greater by the addition of a new monthly Digest of Mining Affairs covering the most recent news and developments in all branches of the industry . . . greater in the brevity and convenience with which this information is presented . . . greater in editorial determination to continue reflecting, defending and advocating all matters of common interest to mining . . . and greater, we hope, in service to every one of our readers.

The Editors.

JANUARY
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EXPLOSIVES

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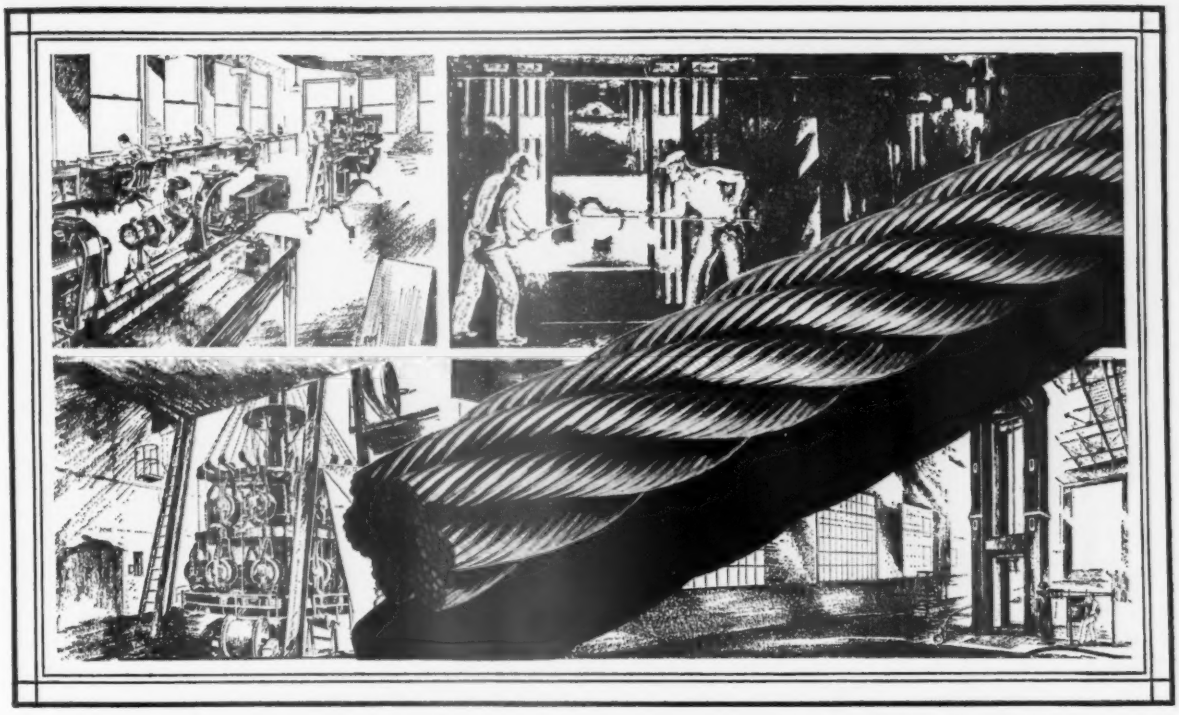

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The World's Greatest Public Utility

MONEY is the world's greatest public utility when moving in the channels of trade. Money in vaults, whether private or public, serves no industrial purpose. The recent effort of the government to force money in circulation has not served to stimulate business because it could result only in an increase of indebtedness which creates a new danger. If paid to the producer for a commodity which the government could use, of which production is so limited as to make inflation impossible, the benefits would be startling.

It will be a new thought to many people that money is the original and the most important of all public utilities. As such it has functioned from the earliest days, and long before regulation was found necessary for those organizations which provide transportation and other services to the public. These services, which in order to render the highest use were required to be in the nature of monopolies, soon found themselves requiring public regulation in order that their monopoly might be protected and the public also quickly realized that protection against unjust charges also required that these monopolies should be publicly controlled. Thus a mutual service grew out of monopolistic control where capital surrendered its control of rates in consideration of the protection of its monopoly.

Money as such has always required public control. First for the purpose of stabilizing business transactions, and second to secure to the debtor a definite knowledge of the requirements of his obligation. Until the government stamp has been placed upon a money issue and until the government has declared that this particular token of stored wealth must be accepted in payment of all "debts, customs and taxes," this token was a matter of barter and not money. Gold and silver through the greater part of the world's history was first a medium of barter and later, by a governmental authority, changed to money; everywhere acceptable because of its supposed intrinsic value and because of the government edict which legalized its status and made its tender a legal satisfaction of debt.

Depressed business conditions have frequently been overcome by a gold discovery which, by creating an increased medium of exchange, has quickly dispelled business gloom and brought renewed business activity. Frequently hopes are expressed that a new gold discovery will mark the beginning of a new prosperity. The gold discovery in South Africa has been the stabilizer of world business conditions for many years and the possibility that a few years more will mark a decline in South African production is, and has been, the cause of uneasiness in the financial world. Increased gold production has always been followed by business prosperity. Gold is the basis of sound money. Sound money is the life blood of business. It is not entirely because gold possesses intrinsic value but because of universal confidence, which confidence has been based upon intrinsic value and government edict.

The amount of gold in the world is limited. Future production of gold is believed to be limited. The wealth of the world has increased much more rapidly than its gold reserves. To offset this, schemes of credit were devised. Credit has been at the same time a marvelous agent for good and, when abused, a Frankenstein of destruction. During current years the abuse of credit has revolutionized our business world. It is bringing about a redistribution of the wealth engaged in production enterprises, increasing the power of the Shylocks, forcing unemployment, starvation and desperation upon hordes of people and severe punishment, if not failure and despair, to the greatest benefactors of the human race, those who use their wealth and their directive ability to provide wages to the great mass of workers who must find employment or starve.

A general abuse of credit has always worked havoc in the business world. Always brought stagnation, destitution and despair, 1858, 1873, 1893, 1907, 1929, all record the same result and in each case recovery came as the result of a gold or silver discovery or a war.

The sure remedy for the present situation is money—real money, sound money, in circulation—not in the Federal Treasury or in bank vaults. No great gold discovery is probable. Why do we not discover silver, gold's helpmate? It has every money requirement except public confidence. It ought to be easier to develop confidence in silver, with some intrinsic value and a positive limit in amount, rather than in bank credit which always fails in times of stress, which has no intrinsic value and no limit to the extent of its use. Let us discover silver and at the beginning give it that confidence which the world's markets give it; viz., 25 cents an ounce. Why not use silver at its current gold market value; as the basis of Federal currency? One dollar silver certificate for four ounces of silver. This would give to the world new sound money to the extent of 20 percent of our volume of gold money; would that be inflation? We have retired credit money in the United States alone since 1929 to an amount eight times greater than the use, on the basis of its current market value, of all the silver in the world. If applied to domestic silver only, it would make so small a change as to make the proposal look absolutely futile.

Again let us discover silver, not for silver's sake, because silver and no other industry has any right to seek special favors from the Government, but to assist in the solution of the world's greatest problems. Referring to this question Will Rogers has said: "Wouldn't this be a great time for some one to come along who knew something."

Money is the great public utility, the common denominator of prosperity and world happiness. If history proves anything, a large enough discovery of gold would immediately solve our industrial troubles. Silver, possessing every other qualification but confidence, is immediately available. The world awaits a leader to chart the way.

Jesse B. Warriner

President, Lehigh Navigation Coal Company and newly elected President of The American Mining Congress.

The
MINING CONGRESS JOURNAL

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1 9 3 3

A Journal for the entire mining industry published by The American Mining Congress

WE ARE EIGHTEEN YEARS OLD

FOR EIGHTEEN CONSECUTIVE YEARS we have brought to the mining world information of every kind about all branches of the mining industry. The field covered has been an ever widening one, until the point was reached where something had to be done about it. Like too much coal and too much copper, there has been an overproduction of facts which the mining man should know. But the problem of "what shall be left out" has been settled—favorably for the reader, we are certain; helpfully for the publisher, we trust.

With this issue we present what we believe to be a greater JOURNAL. It presents an innovation in trade-paper practice. It is a Mining Digest. It will attempt to present even more complete news, information, and ideas than at any time in its 18-year history. Our job is a big one. Forty-three state legislatures are in session; the national Congress is with us; we are facing a new political regime; mining practice is steadily undergoing improvement; important meetings, considering every major problem of mining, are being held; mining men and events are of vast importance. We shall attempt to give our readers a comprehensive survey of all of these things, and more. *We hope you will like us!*

COAL AND POLITICAL CONTROL

THE THREAT of Federal control or regulation advances. A committee of congressional lawyers are determining the "constitutionality" of the Davis-Kelly bill. Congressman David J. Lewis, of Maryland, and Senator Carl Hayden, of Arizona, are pressing their bill, which is an Americanized British Coal Control Act, said not to be vicious and designed to lift coal out of its lamentable situation.

Whether coal has a control act forced down its throat, or not, depends entirely upon coal. It has not discontinued its inter-industry disagreements, but it is united on the age-old position that "nothing political" must be done. Congress is saying that if coal doesn't want congressional action, it must right its position and say what it DOES want.

No one with sane judgment would advocate political guidance of the coal industry. Anyone with wisdom, however, would offer a compromise proposition and get together on some program other than one of negation. If coal does not want political regulation, what does it want? "To be let alone!" Yes; so we have heard! And said. But that does not solve the problem. Coal must decide on something, and the sooner it begins the better it will be for all concerned.

1933 AND THE MINING INDUSTRY

WE BEGIN 1933 with political potentialities. Forty-three state legislatures are in session. The national Congress is in session. A new President, a new Congress, and many political changes are just around the corner. The theme song of all of them is "taxation"—national, state, county, municipal. And the mining industry, represented in some form in practically all the states and always an object of importance to those seeking revenue, is anxiously awaiting the result of the political debate.

Our national Congress is determined to balance the budget. But how? The President-elect has declared against the sales tax. In some of the states frank notice has been given that it is anticipated that the bulk of the tax must be paid by the natural resources. Anything as big as mineral lands will not be overlooked by those seeking increased revenue.

Mining, like every other industry, believes its taxes should be reduced, rather than increased. Mining, like every other industry, is willing to bear its just share of taxation. It objects to being penalized. If the tendency of the past few years continues we shall have no industry to tax. Governments should realize that a defunct business is not a political asset, and should give every consideration to the natural resource industries which, in normal times, are substantial contributions to the prosperity and importance of any state.

THAT SIX-HOUR DAY

FOR MONTHS, with increasing momentum, discussion has been rampant over the possibilities inherent in the adoption of the six-hour day, five-day week. Reports from this or that committee indicate that in most industries its adoption has been compulsory, although not confined to the rigid definition of "six-hour days, five successive days." Industry is lucky indeed if it can report such a working and employment capacity.

Not content to let the need of the day solve the problem, Congress has taken a hand. Bills are now before that body making the adoption of this principle compulsory. Hearings are to be held. Perhaps we shall have more light on the subject. Apparently, as the case now stands, the labor group, headed by the American Federation of Labor, is decidedly in favor of legal compulsion; and industry, by and large, is against its adoption in any form.

Meantime the war about "technocracy" rages merrily. There are no casualties so far, but the battle is wordy. When it is all over we may have to revise Webster, but we will find that progress is still progressing and that our "forty mechanical men" who replace hundreds of workers are providing us with leisure, that may not be such a bad thing after all.

UNIFORMITY FOR UNDERGROUND RAILROADS

THE UNDERGROUND MILEAGE in mines is one-fifth of that of all the steam railroads in the United States. With 25,000 miles of underground track over which cars operate in handling coal from the 6,000 collieries in the United States alone, it is readily seen that the correct details for underground track is a matter of importance.

Chief among the problems of standardizing the details of underground track is that of uniformity of frogs, switches and turnouts. Frogs and switches last from three to eight years. When a new one is needed it must fit. Unless standards exist that maintain the dimensions of these track parts the same over a long period of years, repair parts will not fit and a considerable loss ensues. To meet this problem The American Mining Congress has presented a new standard for "American Recommended Practice for Frogs, Switches and Turnouts for Coal Mine Tracks." It is the result of months of painstaking work and will be of inestimable value to the mining industry.

RAILROADS AND SOUND INSTITUTIONS

TWO impressive reasons exist for the necessity to make railroading a profitable or at least a self-supporting enterprise. First, nearly half the total bonded indebtedness of the railroads—to be more exact, $6,550,000,000 of the $12,000,000,000 of railroad bonds outstanding—are held by insurance companies, savings banks, and held in endowment funds for colleges, hospitals and other similar institutions. Unless railroads are so managed as to be self-supporting, these public institutions must suffer by a loss of their investment and the railroads must go into Government operations and perhaps Government ownership. Either of these results is sufficiently dangerous to the American system of government as to call for such adjustments as will prevent this dangerous condition.

BATTING AT WINDMILLS

BACK IN 1860 there was a loud rumpus in our distinguished national Congress because a little group of far-seeing men wanted to build railroad bridges across the Mississippi River. On the other side of the question were the steamboat owners, who contended that to build the bridges would destroy their business; that they would be a menace to navigation, and that after all "the commerce of the United States depends largely upon efficient river transportation."

Such is political ballyhoo. The Ins and the Outs. Those who have something and do not wish to have it disturbed; those who have nothing and wish to acquire. That has been the battle ground of politics. In the main the common sense of our people, plus the leadership of men, has brought us to the front until we are the world's greatest power. Either we are a sound people or an Almighty Providence looks after us. Change is inevitable. A certain amount of it is imperative to progress. Right now there is much disturbance in the business world because of the change in political power. Most of us are batting at windmills. New men will serve the same constituents, whose interests have not materially changed. Under new leadership we probably will rise to new heights.

THE AGE OF CRITICISM

ONE OF THE EASIEST of occupations is that of critic. The fellow who finds fault with things as they are. A recent example is a book by a self-constituted censor of American life and letters, by a man who does not dignify his criticism by the use of his own name, hiding under the cloak of anonymity. To him everything in America is wrong—the Constitution; our courts; the tariff; taxation; religion; football; what we eat, wear, sing; our home; our entertainment—nothing, absolutely nothing, escapes. And what is his remedy? He doesn't know! We are just wrong, that's all! And Europe is wrong, and the Orient is wrong, the God in His heaven is wrong. One gathers that if the writer could be given a chance, everything could be made just about right.

We have too much of that sort of thing. Too little of a deep appreciation of our place in the sun. During the past year we have heaped tons of criticism upon our President, upon government, upon industry as exemplified by big business, upon our friends, and perhaps upon our families. It has been an era of dissatisfaction, with everyone trying to pass on a personal grief. Everyone seems to have been in a mood of making life miserable for some one.

In spite of all critics (who are just critics and not diagnosticians), we are not permanently a decadent nation. We are a young giant with faith, hope, dreams, ambition; with the will to work and to make this country the haven for the downtrodden that our forefathers designed. We do have ten millions out of work, but we have forty millions employed, and we have a minimum of suffering. We are inaugurating herculean methods to relieve the admittedly bad situation. Already results are apparent. If everybody will stop criticising for six months and sincerely devote their energy to constructive service, we will soon be over the top.

INCONTROVERTIBLE FACTS

REGARDLESS of what the future may hold for Appalachian Coals Incorporated or the much talked-of Federal legislation for the coal industry, we have one primary, incontrovertible fact to meet. If coal mining is to survive, we must produce the lowest cost heat source in the land in order that our consumers and manufacturers may secure the lowest cost power possible to allow them to compete in the markets of the world.

The recovery period in which we are involved today can not countenance waste of money on impossible properties when capital is so badly needed for rehabilitation on the basis of the best practice and the most modern equipment obtainable. Modernization of production methods is the answer to many of coal's problems.

THOSE YEAR END REPORTS

THE ONLY satisfactory reports emanating from mining sources are the safety records. The Bureau of Mines indicates that the industry as a whole has established a safety record that is something to live up to.

Reports generally are disheartening. Production is down, and red ink was standard for bookkeeping. Bituminous coal, operating at three-fifths of normal, was able to swim the tide of adversity more successfully than other minerals. Copper was at its lowest ebb, with its price phenominally low, and a year's supply on the stock pile. Nevertheless the industry is not downhearted. It is busily engaged in working out its problems. When we finally emerge from this uncomfortable situation, we are confident that it will be found that the mining industry has led the way.

Protection and the Mining Industry

by

HERBERT WILSON SMITH *

SERIOUS CONSIDERATION of protection for the widely varied products of the mining industry began for the first time in the United States following the World War. All mineral production had been stimulated, producers were more aware of the value of their natural resources and, like everyone else, wanted to continue in business. Producers of war minerals particularly asked for tariff consideration in the Emergency Tariff Act of 1920. This was not granted. The Tariff Act of 1922 did give protection to many metals and minerals which had theretofore been on the free list. Mineral products as so-called raw materials had been considered not properly subject to duty. In the formation of the Tariff Act of 1922 all protection on minerals was bitterly opposed on this ground. The chairman for the Ways and Means Committee one day interrupted a witness in such a protest, saying: "There has been a great deal of discussion of raw materials before this committee. What is a raw material? Hides, lumber, minerals, have been called raw materials. They are raw materials to further stages of industry, but they are some man's finished product. A tree standing in the forest is raw material, but when it has felt the woodsman's axe it is that man's finished product. A steer on the open range is raw material, but when it has felt the rope and branding iron of the cattleman it is his finished product. Ore lying in the ground is raw material, but when it has felt the miner's pick it is his finished product and wherever, to protect these finished products of American labor, they need protection, they are going to get it."

In the main the protection provided in this tariff law of 1922 justifies itself by the more stabilized price range and increased domestic production. In those cases where domestic production did not increase revenue was provided for the Treasury of the United States. We must never lose sight of this fact and that all money collected as tariff lessens the tax burden at other points.

In the Tariff Act of 1930 there was not a great deal of change from the status of mineral protection provided in the law of 1922. The Revenue Act of 1932, however, provided in the form of an excise tax of the specific amount of various products of the mineral industry when imported from abroad a definite form of emergency tariff. Four cents per pound on imported copper; $2 per ton on imported coal; one-half cent per gallon on imported oil. These three articles have been left out on earlier tariff acts because of international considerations, because some of them were produced for export and because all are potential surplus domestic production.

NO SUBJECT of public discussion is treated with more generalization and less specific statement than the tariff. The first broadminded thought advanced is general opposition to tariff. It is reasonably safe to say that people who talk in glittering generalities against tariff are not only unfamiliar with it but have never seen a copy of the tariff law. This complete lack of information makes both the speaker and the audience of one mind when vague statements are made, such as "Tariffs by negotiation"; "If we would sell to foreign countries we must buy from them"; "Foreign countries must pay their debts in goods"; "Tariff walls"; "Retaliatory tariffs." What is the truth about the United States, its foreign trade, its purchases from foreign countries, its imports and its tariff rates? First, there is no tariff wall. Two-thirds of the imports into the United States come in free of duty. This is true year after year. The percentages of free import run 64, 65, 66, 67 percent from year to year with startling regularity; goods imported on the free list from foreign nations with no duty whatever. Where is the tariff wall in that situation? The United States is the greatest market place in the world for other nations. It is the best customer of every important exporting nation. In 1931 our imports from the United Kingdom were more than $135,000,000; from Germany, $127,000,000; from France, $79,000,000; from Belgium, $34,000,000; Italy, $62,000,000. Total imports from Europe, $640,000,000. From Japan, $206,000,000; from all of Asia, $564,000,000; from Brazil, $110,000,000; from all of South America, $307,000,000; from Canada, $266,000,000; from Mexico, $48,000,000; from Cuba, $90,000,000; from all the North American Continent, $516,000,000. Total imports for 1931 from all countries, $2,090,000,000.

What is there to retaliate for and what evidence is there of retaliation? For example, under the Underwood Tariff Act, which at that time was designated as nonprotective tariff, there was imported into the United States $1,892,954,876 in 1914; under a protective tariff in 1925 our imports were $4,179,240,000. Our exports in the same years were, respectively, in 1914, $2,218,580,200; in 1925, $5,084,957,000. Now what do these figures tell us? They tell us that a protective tariff does not keep out the aggregate volume of goods, but merely limits the importation of those products which we can best produce at home, builds our internal prosperity and increases our volume of foreign trade, both import and export.

Our relation to world trade, commerce, and exchange of funds can not be correctly reckoned without taking into account our tourist expenditures. The greatest of world travelers, the American tourist, in prosperous times spends one billion dollars every year in foreign countries for living, personal service, and goods. No other country spends in world travel in proportion to its population 1 percent of the amount of money spent by the citizens of the United States. Have you ever seen crowds of tourists from England, France, or even Canada traveling to our country, staying six weeks to six months, and spending from $500 to $50,000 each on such a trip? Of course not. Yet this is what American citizens are doing in every country in the world. This money is spent in a large measure for living, travel, and nontransportable commodities. This money stays in the country where it is spent. Only a prosperous America can do these things, and the sooner both American internationalists and the foreign protagonists, who would be broadminded in our behalf, realize this, the quicker such fogs of misunderstanding will be dissipated.

The movement of credit and goods is not in direct ratio. No country buys in greatest volume from the country to which it sells the most goods. Goods are bought in international trade the same as they are bought at the neighborhood store, where the best values are secured and the most reliable, expeditious deliveries. South America sells beef to England in far greater volume than to the United States, but coffee is sold to the United States in many times the amount sold to England. There is no retaliatory tariff involved in that Americans are coffee drinkers; the English drink tea; and we also raise our own cattle. Agricultural machinery from the United States is sold the world over, as are American motor cars. No foreign buyer of American goods is concerned over our individual tariff policy when he is seeking value in merchandise. Does the housewife worry about the tariff policy of Brazil when she buys a pound of coffee, or the tariff policy of France when she buys a pair of imported gloves?

* *Union Carbide & Carbon Corporation, New York City.*

THERE ARE TWO TYPES of tangible results of human labor, one transportable goods and the other nontransportable service. Transportable goods can compete in foreign markets and nontransportable service can not. The person whose work results in a nontransportable service is protected by geographic isolation. If he lives in a country of a low standard of living, nothing can help him except economic conditions which will raise the standards of that country. If he lives in a country of a high standard of living, such as the United States, he has the protection of geographic isolation for the maintenance of his living standard. A tariff can only affect directly transportable goods. To illustrate: A structural iron worker in Antwerp can not compete with a structural iron worker in New York City. Each man must work on a building in his own city for the wages that prevail there. But a manufacturer of structural iron in Antwerp can compete with a manufacturer of structural iron in New York just as soon as he loads the structural forms on a ship and sends them here. A tariff is therefore a stop-gap provided by law to protect those workers the product of whose labor is a transportable commodity. All other workers and all professional people have the protection afforded by geographic isolation, and when this tariff protection affects only one-third of the merchandise imported, as is true in the United States, it surely forms no barrier to foreign goods.

When retaliatory tariffs are mentioned one would imagine that foreign countries had no tariffs and they were only enacting them to combat our laws. When we look at the tariffs of other countries, their schedules make us feel most modest and unselfish. We read articles criticising any policy in this country which would protect its products. Yet in France, today, wheat is selling at $1.50 a bushel. The only way wheat can sell at $1.50 a bushel in France, with the world market below 50 cents, is by an absolute embargo, and that is what France has. One provision of French protection of production of its own country is to forbid the importation of any wheat until all needs are first met by domestic production. In Czecho-Slovakia there is a certain tariff protection against the importation of motor cars which was deemed to be insufficient. There is a manufacturer of motor-car springs in Czecho-Slovakia. One provision of their embargo regulations is that no automobile should be imported into Czecho-Slovakia with springs. Provisions like these make our own tariff regulations seem modest indeed. The United States has always had a policy of one tariff, one set of rates and no discriminatory provisions. Other countries, almost without exception, have three sets of rates. Sometimes the list of countries who are to receive special treatment are set forth in the organic act itself; sometimes they are stated by proclamation. Preferential treatment by other nations are always subject to negotiations and favoritism. Critics of American tariff would always do well to first study the tariff law itself, and, second, to study the tariff laws of other countries. Our first job is to protect our markets in the United States where 90 percent of our products is consumed. No foreign country expects to get into this rich market without paying an admission fee, and that admission applies to only one-third of the goods imported.

FOREIGN NATIONS, and more particularly foreign business houses, will always, as they have done in the past, oppose any tariff on merchandise to be shipped to the United States. Any lowering of tariff that results therefrom is to their advantage. Such efforts must be expected, but our own citizens should not join them. The citizens of other countries do not broadmindedly urge foreign competition with their own goods to a degree where it is dangerous to their own producers. So far as our own economists and our own political spokesmen join in these pleas for tariff reduction or abolition, the foreigner thinks us simple. The tariffs of all countries, like those of the United States, are levied for two purposes—to raise revenue and to protect home industries. There is no more retaliation in their tariff than there is in our own. Reduction in the statistical value of both imports and exports is not peculiar to the United States. All countries show the same figures. This reduction is greater, expressed in terms of value, than in terms of volume, as a large part of the reduction is due to lower index price of all commodities. When rubber was selling for a dollar a pound our imports of rubber looked huge. With rubber selling at 3 cents a pound our rubber imports are just as high in volume, but the dollar value is certainly a great deal less. The same is true of coffee or of sugar.

Labor employed in the mining industry has always been paid at a relatively high wage. The product of the mining industry becomes more refined as commercial processes develop. Zinc, lead, copper, quicksilver, all enter commerce as finished metals. When the mining industry must buy its labor in a protected labor market it should, when necessity requires, be permitted to sell its product in a protected market. It is probably true that the theory of protection does not apply to all minerals or to all metals any more than it applies to all other commodities. You would not, for example, advocate a duty against rubber, coffee, tea; none of which are products of this country. There are metals and minerals which occupy a similar status, but the idea that minerals or metals as such are not subject to protection has probably been definitely abandoned for all time and these products take their place in tariff consideration along with other manufactured articles for whatever protection the circumstances surrounding their production justify.

THE THIRD MAJOR CAUSE of decrease in dollar value of international trade is depreciated currency. Every country which has gone off the gold standard has automatically reduced the dollar value of its commodities in the ratio of its depreciated exchange. Again, the United States has taken no tariff steps to correct this injustice. France, Germany, and Canada automatically raised their tariffs to compensate for currency depreciation. This currency depreciation from major countries is about as follows:

England	28 percent
Japan	50 percent
Spain	58 percent

through a list of 12 countries. On many commodities this more than wipes out the tariff protection and leaves the tariff protection on all commodities a fraction of that provided by law. If this constitutes a tariff wall it is one which our foreign competitors are hurdling with surprising ease.

The remainder of the reduction is due to general reduction in world trade. This has followed the world-wide deflation due to the excessive borrowing of the 10 years following the World War by all nations and particularly nations who borrowed tens of billions of dollars from the United States. These debts they now tell us must be paid only in goods to be shipped to the United States without duty. The later defaulting of this overburdened credit structure brought on a world-wide deflation. We produced the money that we loaned foreign governments in the operation of our industries under protection. The first law passed by the first Congress of the United States was a tariff law. We have had tariff protection in varying degrees ever since. The thoughtful American knows that we have done pretty well under such a system, and even our foreign competitors should be willing to let it run a while longer to build up reserves for their nations to borrow from again.

ALL AMERICAN INDUSTRY is giving serious thought to possible tariff developments during the coming four years. It has been 20 years since a tariff bill has been written under the guidance of the party that will be in power after the 4th of March. During that 20 years the whole industrial structure of the country has changed. The West, the great agricultural areas, and the Southern States have all become industrialized. Those States heretofore advocates of free trade or low tariffs now produce more transportable goods and less nontransportable service. Production of all kinds, even agricultural, has become highly specialized. The truck farmer, whose cultivated areas surround large cities, has been supplanted by the specialized growers; head lettuce on a thousand-acre farm in Colorado; green beans in mile-long fields in Florida; tomatoes in midwinter from Arizona; peas from Texas in the early spring. Steel mills have gone into Alabama and Texas with hundreds of millions investment. Textile mills, with other hundreds of millions, have gone into Tennessee and North Carolina. The chemical industry has hundreds of millions invested in southern States.

We can all remember, concerning the incoming administration and members of both Houses of Congress, that they

(*Continued on page* 23)

MINING EVENTS

COAL

THERE SEEMED TO BE a veritable epidemic of annual meetings for the coal industry during the month of December. Led by the Coal Section of The American Mining Congress, held in Washington, D. C., December 15, and followed by a series of meetings of the State Coal Associations, the convention calendar was full.

The high-light for the coal industry was, as usual, the never ending controversy about Coal Control Legislation. The National Coal Association continued its resounding whacks against the Kelly-Davis bill, now before Congress, and was ably abetted by the local associations which took man-sized wallops at the proposal advocated in the legislation. The American Mining Congress kept up its 35-year program of urging coal, and all other natural resource industries, to get together upon some program which will permit them to solve their own problems, before the politicians force them to accept something they do not want at all. Congressman David J. Lewis (Maryland) appeared before the Convention of The American Mining Congress and explained the proposal advocated by Senator Carl Hayden (Arizona) and himself for the legislative relief (?) of the industry. The bill presented is patterned after the British Coal Mines Act, the results of which seem to be somewhat confused when reaching the ears of operators in this country. The American Mining Congress also reported upon its efforts to bring all natural resource industries into harmony on some concerted plan of action. It has for years been a leader in proposals for such action, and for the past eighteen months has had a national committee, fully representative of all natural resource industries working actively to secure an agreement. The committee, representing copper, lead, zinc, coal, gold, silver, oil, and allied interests, reported that the best it could agree to at the present time, is to agree that "something should be done." The National Coal Association started an independent effort to bring the natural resource industries into agreement, and held a meeting in New York which was attended quite largely by lawyers representing various producers. The American Petroleum Institute, at its recent annual meeting, went firmly (again) on record against control of natural resources by politics, and voted in favor of amending the trust laws to permit producers to get together. Meantime, the Walsh bill, presented by the Honorable David I. Walsh (Massachusetts) purporting to do something about the trust laws, and permit producers to "get together" reposed peacefully with the 72nd Congress.

The American Federation of Labor held its annual meeting at Cincinnati, Ohio, and urged the adoption of the six-hour day, five-day week; the adoption of national unemployment insurance and went firmly on record against any wage reduction. The statements made by William Green, president of the Federation have been widely quoted as bordering on the radical, since he advocates many things, born of the present national emergency, that in normal times would cause alarm.

BITUMINOUS PRODUCTION for 1932 is estimated as about 20 percent less than 1931. Some of the reduction is accounted for by the strikes that have been in progress in the mid-western field, but the greatest reduction is, of course, attributable to the decrease in industrial activity. The accident record for the industry was excellent although the recent disaster in the Illinois field will change the average considerably.

THE ANTHRACITE OPERATORS are trying to solve their difficulties, which center around a cheaper fuel for consumers, in competition with oil and gas. Conferences have been steadily held with the United Mine Workers of America, looking to an adjustment of wage scales. They have kept up their strong fight against their competitors, and have made splendid headway. It is estimated that production in 1932 will show a reduction of about 18 percent, which is the lowest yearly total in many years, although the output has steadily increased during the past three months, and in recent weeks has run above production of a year ago.

The Glen Alden Coal Company, one of the largest of the anthracite producers, together with other large producers, announced in mid-December a cut in prices of 40 cents a ton, to apply on coal used in the region, and to capture the local trade. The price battle is between the Old-line companies and the so-called independents, and sets a precedent, as it is the first time in history that coal companies have paid any attention to local consumption, and it is also said to be the first time that operators have attempted to undersell each other, prices always being standardized.

A special report on the industry recently presented by The Brookmire Economic Service, says as follows:

> "The greatest obstacle to prospects for the increased use of anthracite lies in the relatively high price. Wages, freight rates and fixed charges remain too high to allow anthracite operators to cut existing prices to levels which would increase the use of their product over other fuels. The six-year wage agreement, signed in July, 1930, called for the maintenance of the then existing level of wages.
>
> "Improvement in the anthracite situation must come from the inside. Advertising campaigns to emphasize the cleanliness and reliability of the product should be expanded. Improved merchandising and servicing are more necessary now than ever before. Promulgation of automatic stoking and other similar improvements over current methods of heating would be helpful. Continual research by the Anthracite Institute should lead to new uses for coal. In the final analysis, however, the price of anthracite must be brought down to the point where competition of other fuels can be sucessfully overcome. This entails more economical mine operation, reduced wages, as well as lower transportation and distribution costs, since any appreciable reduction of the oil supply is not in prospect for some time.
>
> "Anthracite production was curtailed somewhat during the latter half of November and prospects were for less work for the employed mineworker, according to reports received at the Anthracite Institute.
>
> "The steady influx of foreign coal to our ports continued to the latter half of November. Preliminary reports show that 6,180 tons of anthracite were received from Russia at Boston, in the week ended November 26th. In the preceding week 13,935 tons of foreign fuel were received at the same port. This larger shipment consisted of 8,258 tons of anthracite and 503 tons of coke from the United Kingdom, and 2,999 tons of anthracite and 2,175 tons of coke from Germany.
>
> Anthracite imports for the ten months ended October 31st, totalled 526,406 net tons against 502,292 net tons in the corresponding period of 1931. This increase this year came notwithstanding the $2.00 tariff rate which was effective during the 1932 period reported, but which has since been lifted by a Treasury Department ruling. Depreciation of foreign currencies was said to be the factor that cancelled the expected protective benefit of the tariff to American anthracite. Estimated anthracite production for November amounted to 4,260,000 net tons against 5,234,000 in October."
>
> "The production of anthracite for the week ending December 17th, as reported to the United States Bureau of Mines, Department of Commerce, Washington, D. C., is estimated at 1,237,000 net tons. This is an increase as compared with production of the preceding week, of 301,000 tons, or 32.2 percent. Production during the corresponding week of 1931 amounted to 894,000 tons."

METALS

THE COPPER INDUSTRY is in the dust. Production has dropped. The total amount of copper on the surface is said to be sufficient to last any normal demand for the product for almost a year. The price is low and there is no incentive for production. Conferences have taken

the limelight with attempts to secure agreements with foreign producers. Leaders in the industry have been abroad for conferences; foreign leaders have been in America, but the dawn of a new day for copper has not yet arrived. Meantime the Copper and Brass Research Association is doing wonderful work. Its research efforts looking to new uses are progressing. They have planned a mammoth exhibit for the Chicago Pageant of Progress, which will show the tremendous growth in the uses of copper during the past one hundred years.

The Copper Conference, which opened in New York on November 29, gave promise of results. Each company was represented by the men who had the authority to speak for their company. Among foreign producers attending were: Felicien Cattier, president of Union Minere du Haut Katanga; S. S. Taylor, managing director, Rhokana Corporation; Sir Auckland Geddes, chairman of Rhokana Corporation; James Y. Murdoch, president of Noranda; Robert C. Stanley, president, International Nickel Company of Canada; L. Vogelstein, and Dr. Otto Sussman represented Roan Antelope.

The meeting was called to accomplish (1) agree to continue some production curtailment plan; (2) plan to control present heavy surplus stocks; (3) attempt to stabilize world prices at reasonable level.

In spite of the fact that such strong representation was present, the conference failed to reach an agreement as to production for the ensuing year. Copper metal has been selling for below 5 cents a pound, which continues the unfavorable copper price which has prevailed for the past two and a half years.

In commenting upon the conference, *Business Week* says:

> "At the end of the conference the future of the industry looked gloomy.
>
> "As a mater of fact, the situation probably isn't nearly so bad as it seems at first glance. In the first place, any prospect of unrestricted production is about the last thing any real authority in the industry expects. There is already too much copper in the world. Stocks of almost every producer are large. To go ahead with production would only force copper prices to new lows. They are already below 5 cents in Europe. It is more likely that producers will stick pretty closely to present production. Almost certainly there will be further negotiating before any member gets very far with price-cutting."

GOLD AND SILVER

GOLD has been the only metal that has been prosperous. With its fixed price it has been on the up and up during the depression. Big producers are making hay. Small producers everywhere are active. Even the old deposits in the Georgia Mountain district are being prospected for the yellow metal. From many parts of the far west comes newspaper headlines of a gold stampede.

There is no change in the silver situation. Considerable discussion has taken place, both in Congress and at the various conventions, looking to some method that will help to restore silver to a healthy condition.

At the annual meeting of The American Mining Congress, Senator Key Pittman, of Nevada, in presenting the problem of silver, said:

> "There is another money exchange problem that is destroying our export trade, that is the tremendous depreciation in the price of silver and its consequent effect upon the exchange value of silver-money using countries with our gold standard money. Over half of the people of the world have no money save silver money. * * * Gold is flowing into China to purchase cheap silver money with which to cultivate products which they once purchased in the United States and to build factories to manufacture those things which they once bought from us. This same condition applies to every country where the ultimate purchaser must pay for our products in silver. We must raise the exchange value of silver money if we are to restore our exports to such countries and maintain our trade there. The United States might accept in full or partial payment from Great Britain and other countries silver at an agreed price slightly above the world market price in payment of international obligations due the United States. The Government can adopt an act which I introduced to purchase silver produced in the United States at the world market price of silver and with silver certificates of the denominations of $1, $5 and $10. This is not a new practice and it would cost our Government nothing. It would expand our currency issue at the present time some eight million dollars annually in silver certificates but it would take off the market of the world silver purchased in the United States and to a certain extent offset the dumping from India of silver derived from the melting up of silver coins.
>
> "Through international agreement silver reserves might be gradually established in the treasuries of various countries, not in lieu of gold reserves upon which to base the gold standard, but as a support and relief to such gold standard. In my opinion, the easiest and the most direct relief to the economic situation throughout the world can be brought about through a larger use of silver money.
>
> "It would be absolutely unnecessary to attempt to fix the price. I am opposed to all price-fixing schemes. I know of no case in which they have worked. I only seek to restore the law of supply and demand. Once stabilize the supply to the normal mine supply and the normal use and the exchange value of silver money would be substantially stabilized. Certainly the fluctuations in the exchange value of such silver money would not be sufficient to interfere with credit transactions based upon the future value of silver money."

C. W. HANDY, in the recent issue of *Mining and Metallurgy*, had the following to say about the "Future of Silver":

> "One law cannot be evaded, the economic law of supply and demand. Silver, like any other commodity, is subject to this law; and its price in the long run is determined by existing conditions.
>
> "I say 'in the long run,' because at times silver has appeared to move *contra* to basic conditions. Such movements, however, are occasioned by the market's attempt to anticipate changes in these governing conditions. If the expected changes materialize, then the new market level is justified; but if they do not, then the market will revert to its previous status. A striking example of such a move occurred in November, 1931, when the price advanced over 7 cents in ten days and then in the next two weeks lost more than it had gained. The reasons for this advance were that the speculative element interpreted certain events as favorable to silver—namely, England's suspension of the gold standard, higher wheat prices, and the Chinese-Japanese crisis. When these expectations proved unjustified, the inevitable relapse followed because the governing conditions had not changed.
>
> "One speculative factor which has periodically affected the silver market during the last two years has been the expectation that some action, beneficial to silver, would be taken, either by individual governments or by international agreement. So far, nothing of the kind has developed, but without doubt the question will again be raised at the World Economic Conference.
> * * *
>
> "Silver consumption in the arts and industries is showing a decline. The United States and Canada, which account for about three-quarters of the total consumption in this field, will use about 25 million ounces during 1932, a decrease of 5½ million from last year. The total falling off, therefore, will not be large; so that, although it indicates an unfavorable trend, it is a minor market factor.
>
> "We now come to the consumption of silver by the Far East and it is my opinion that the tremendous shrinkage in demand from India and China is the chief cause of low silver prices. These two countries ordinarily import three-quarters of the world production of newly mined silver. In 1931, when the depression was increasing, their proportion was 60 percent; but this year I doubt if it reaches even 35 per cent. Perhaps ounces instead of percentages will emphasize this decline even more. The combined consumption of India and China for each of the last five years was as follows, in millions of ounces: 1927, 175; 1928, 213; 1929, 218½; 1930, 217½; 1931, 116. My estimate for 1932 is approximately 50 million ounces.
>
> "What has caused this astounding shrinkage? Broadly speaking, it is the result of the world economic depression, on account of which the prices of exports

from India and China—largely raw products—have fallen to an extreme degree. Furthermore, the buying power of the rest of the world, even at low prices, has been seriously curtailed. Consequently the credits abroad of India and China have diminished, thereby lessening their ability to import silver.

"Just as soon as conditions improve, an improvement in the exports of India and China will result, and with their enlarged exports will come increased purchasing power and higher prices for silver."

LEAD AND ZINC

THERE HAS BEEN no developments in the markets of lead and zinc. They remain stagnant and dull. The American Zinc Institute and Lead Industries, Inc., continued their research work, and presented splendid exhibits to two of the leading conventions in their field. According to the *American Metal Market*:

"The Joplin ore market was reported firm and unchanged at $17 per ton for flotation and $18 for coarse grade. Output estimated at 4,000 tons, was the largest of any recent week. Sales were 3,760 tons while shipments totalled 4,486 tons. Stocks decreased slightly, the present estimated total of 38,500 tons comparing with about 39,000 tons reported previously.

"The American Metal Company is said to have contracted for a large tonnage of concentrates for its Blackwell Smelter to be furnished from the stock of Commerce Mining Company.

"Total bookings for lead for the month were not quite 7,000 tons. There is a potentially large demand in prospect should a buying movement get under way."

IRON

SKILLINGS REVIEW presented in a recent issue their summary of what is immediately facing the iron ore producers. We present it here in briefed form:

"Contemplation of the iron ore industry of the Lake Superior district brings them face to face with the question of whether the state of Minnesota and the municipalities in which mining companies operate, will tax them out of existence. * * * The question arises as to whether the men who exercise the taxing powers will use them intelligently for the relief of taxpayers, or will they wait until the taxpayer quits paying taxes.

"Taxes on the iron mining industry in Minnesota, it is explained, cannot be reduced because it would interfere with the political machinery.

"The citizens of Minnesota, those in control of local expenditures, fee owners and the mine operators, all are confronted with a most serious situation, and in making their plans should no longer in any way be guided by unjustified optimism to do things that may ultimately be directly against their own interests.

"The steel industry has been forced to drastic steps to protect itself. Burdensome investments, which involve heavy carrying charges, are being scrutinized with the utmost care, and in many instances are being abandoned and written off. The tendency is to sacrifice everything that involves heavy carrying charges for the future and cannot be turned into money earning capacity soon. Numerous iron ore properties in Minnesota have been dropped during this year, and unless carrying charges of all kinds are not substantially reduced during the next 12 months this state will witness a greater cancellation of ore leases than has ever occurred in the history of the ranges.

"An assessed valuation of $225,219,048 was set December 17 by the Minnesota Tax Commission on unmined iron ore in this state. There is a net decrease of only $426,050 under one year ago. The total, however, represents a boost of $8,313,240 by the tax commission over the total assessment as returned by the county boards. A total valuation of $7,337,932 was fixed by the commission for stockpiled ore for this year, a decrease of $798,124 from the commission's figures of a year ago. The commission, however, increased the total assessed valuation for stockpiles as returned by the county boards by $1,014,157. The county boards returned a total of $1,323,766. Iron ore in stockpile in Minnesota May 1, 1932, totaled 15,015,622, which compared with 14,823,087 tons on the same date in 1931."

Coal Control Bills Status

AT A MEETING of the Mines and Mining Committee of the Senate, on December 17, Senator Carl Hayden, from Arizona, favored the enactment of the Hayden-Lewis bill, a measure patterned after the British Coal Mines Act. The committee then referred both the Davis-Kelly bill and the Hayden-Lewis bill to a committee of three Senators: Messrs. Walsh, Montana (Democrat); Logan, Kentucky (Democrat); and Robinson, Indiana (Republican), all three of whom are lawyers. It is anticipated that the committee will report back to the whole committee some time early in January in regard to the constitutionality of the proposals. The representatives of the United Mine Workers of America have been in Washington constantly seeking the passage of the Davis-Kelly bill, which has won such united objection from coal producers in all districts.

Unemployment Insurance

PREDICTIONS that some type of unemployment insurance would be adopted in eight to ten states before the end of next year were made following endorsement of the principles of such insurance by the American Federation of Labor. To date nine state commissions have favorably reported on the principles of such insurance and about 15 to 20 others are expected to consider such propositions at the next meetings of their legislatures.

A compilation of the number of bills introduced in various states since 1916, made recently, showed a total of 71, of which 37 were offered last year and approximately 12 this year.—*Condensed from New York Times.*

Legislation for Capital Structure Changes

LEGISLATION that would permit corporations to avoid receiverships by complete reorganization was taken up at a joint meeting of the subcommittees of the Senate and House Judiciary Committees on December 12. The measure under consideration, based on Senate Bills 4921 and 4923, both by Hastings, and House Bill 12753, McKeown, provides that any corporation may file a petition with the Federal court in the district in which it does business stating that the corporation is insolvent and desires to reorganize. It may then present plans for such reorganization and may include in such plans proposals to alter the rights of creditors, including bondholders, and also of its stockholders. Such reorganization plans may then become effective upon approval by two-thirds of the creditors in each class affected and by the Federal judge.

Illinois Wage Agreement Extended

THE ILLINOIS Coal Operators Association, W. J. Jenkins, president, have signed an agreement with the United Mine Workers of America, extending the present wage contract, for two additional years, thus assuring stable conditions in the Illinois field until March 31, 1935. The agreement thus extended, was signed in July, 1932, to endure for eight months, and assured the miners a basic day wage of $5.

Considerable strife in the Illinois field during the last year has kept the industry in chaos. The labor factions divided into two groups—one, the United Mine Workers of America with whom the contract was negotiated, and the other the Progressive Miners' Union. The *Black Diamond*, of Chicago, announces that there is some talk of a consolidation between the Progressives and the National Miners' Union, under the leadership of Tom L. Lewis, former president of the United Mine Workers. The *Black Diamond* also says: "The proposed merger of the two outlaw miners' organizations is no idle threat. The National Union has made great strides in attracting a following in West Virginia and Eastern Kentucky, and the strength of the Illinois Progressives is too recent to be forgotten by anyone. Their strength in Illinois was never questioned after they compelled the president of the Illinois Operators Association to sign their working agreement."

With labor wages down to extremely low levels in other fields, the Illinois group in signing an agreement to maintain the $5 scale for two years, again demonstrates their foresight, their faith in the ultimate righting of the coal industry, and their belief in the importance of a settled labor situation.

LEGISLATION

The Wheels of Government

THE CONGRESS OF THE UNITED STATES reassembled on December 7 for the short and final session of the Seventy-second Congress. With the passing of this session comes the retirement, at least temporarily, of many of the leading figures who have dominated congressional affairs for many years. These include such well-known and able public servants as Reed Smoot, United States Senator from Utah, and James T. Watson, Senator from Indiana. The calendars of both House and Senate contain many bills of special importance to the mining industry and a considerably larger aggregation of bills looking to improvement in general business conditions which would have a special effect upon the natural resource industries. These measures include everything from the sales tax to Government control of the coal industry; from a liberalization of the antitrust laws to unemployment insurance.

The particular session in question is truly a lame-duck session. Fully one-third of the House of Representatives was defeated in the recent election. Coalition, opposition, party politics, and all of the inherent disabilities of such a session will unquestionably make it difficult to secure any kind of constructive legislation during this session. Budget balancing has right of way, and many of the departments will feel the political axe because of the condition of the national purse. The particular representative of the mining industry, the United States Bureau of Mines, will not be the exception. Already it has announced that because of the economy program it has had to discontinue 12 of its mine rescue cars.

For the coal industry probably the most important measures are the Davis-Kelly Bill and the Hayden-Lewis Bill, purporting to solve the problems of coal production. The Davis-Kelly Bill has the strong endorsement of the American Federation of Labor and the United Mine Workers of America, and representatives of those organizations have been in Washington continuously in an effort to get action thereon during the short session. The general opinion is that this measure in its present form can not pass Congress because of its unconstitutional provisions. The Hayden-Lewis Bill is not so well known as the Kelly-Davis Bill, but also aims to solve coal's problems. It is patterned quite largely after the British Coal Mines Act, the results of which are somewhat confusing as judged by reports reaching the United States. Both the Davis-Kelly and the Hayden-Lewis Bills have been referred to a subcommittee of lawyers to report back to the Committee of the Interstate Commerce Committee of the House upon the constitutionality of each. It is anticipated that the report of the subcommittee will be made early in January.

Bills to suspend the annual assessment work on mining claims have been presented. In the House, the bills are sponsored by Congressmen Evans of Montana, Eaton of Colorado, Taylor of Colorado, Swing of California, and Smith of Idaho. In the Senate, bills are sponsored by Senators Borah and Bratton. The House Committee on Mines and Mining has favorably reported a bill identical with those recently introduced. Their passage means that the usual requirement of work on mining claims amounting to $100 will be suspended on all mining claims in the United States and Alaska during the fiscal year ending July 1, 1933.

As this is being written (December 27), announcement has been made that an attempt will be made to put through this session of Congress a reduction of seven hundred billion dollars in the annual supply bill. Certainly an earnest effort will be made during the short session to balance the budget, and a special effort will be made to enact the manufacturers' sales tax. It is anticipated that all departmental appropriation bills will be passed at this session, although at the present time only three of the bills have passed the House, and are still being considered by committees of the Senate.

The legislative hopper is full to overflowing and, at least for the time being, the mining industry is not the center of attack. Every indication points to the certainty of a special session of Congress immediately after the 4th of March. If the present session gets through the regular departmental appropriation bills, its proposed farm relief legislation, its "beer for revenue" plans, its manufacturers' sales tax, and its regular routine duties, it will have its hands full. A bill of some interest is that proposed by Senator Black (Dem.) of Alabama, which provides that no article or commodity shall be shipped in interstate commerce which was produced or manufactured in any mine, quarry, mill, cannery, workshop, factory, or manufacturing establishment in which any person was employed more than five days in the week or six hours in the day. Coming from Democratic sources, this may be an indication of the trend of the wind if an extra session should be called by President-elect Roosevelt. The following review of the bills pending brings the present legislative calendar up to date:

ALIENS. To amend the naturalization laws so that any alien may register who is not ineligible to citizenship if such alien shall make a satisfactory showing to the proper officials (Senate Bill 5133—King, referred to Immigration Committee), and (House Bill 13812—Dickstein, referred to Committee on Immigration and Naturalization) to provide correction of status of aliens lawfully admitted without requirement of departure at foreign port. (House Bill 13810—Dickstein, referred to Committee on Immigration and Naturalization) To provide for the support and relief of aliens who fall into distress and to remove them to their native land within three years after entry. (House Bill 13811—Dickstein, referred to Committee on Immigration and Naturalization.)

ALIEN EMPLOYMENT. To give preference to Americans over aliens in employment, and providing penalty (H. R. 13307, referred to Labor Committee).

BONDS FOR PUBLIC IMPROVEMENTS. To create a permanent improvement fund of $500,000,000 by bonding with sinking fund provisions (Senate 5087—Byrnes, referred to Appropriations Committee).

DEPRECIATED CURRENCY. To provide revenue by the collection of a tax on articles imported into the United States from countries the value of whose currencies have depreciated more than 5 percent below the standard value as determined by the Secretary of the Treasury, in addition to other tax or duty imposed by law, the tax to be 1 percent for each 1 percent of depreciation of currency. (House Bill 13790—Hill of Washington, referred to Ways and Means Committee.)

EMPLOYMENT. To prohibit the employment on Federal public works of an alien or a resident of a state other than the one in which the services of a laborer or a mechanic are used. (House Bill 13493—Brunner, referred to Committee on Labor.)

IMPORTS. To prohibit the importation of goods mined, produced, or manufactured by any foreign government monopoly, or in any country in which the freedom of labor, individual liberty, private enterprise, or the right of private property are not established and protected by law, at the discretion of the President of the United States. (House Resolution 13019—Collier, referred to Ways and Means Committee.)

MINERAL LANDS. To provide for agricultural entry of lands withdrawn, classified, or reported as containing any of minerals subject to disposition under the leasing law or supplementary acts. (House Bill 13745—Evans of Montana, referred to Committee on Public Lands.)

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MODERN MINING PRACTICE

Standardized Mine Track Work—its relation to Safety, Production and Maintenance

by

J. B. HASKELL *

and

R. L. IRELAND, Jr.**

UNDERGROUND COAL TRANSPORTATION is in reality an industry within an industry. It is an industry charged with the task of transporting more coal than is transported by the railroads of this country, and it is a task that must be performed economically and efficiciently if it is not to be a handicap to the major industry which it serves.

There is a point or so called bottle neck that is the limiting factor of production in many lines, a point that restricts all other production preparations. Experience has shown that transportation is usually the bottle neck of coal production. In both hand and machine loading, the supplying of cars as needed and their movement to the tipple is vital to the success of the operation. And so it is essential that a means must be supplied whereby the cars, empty or loaded, can be moved economically and quickly. The planning of the haulage system with its main and secondary tracks must take into consideration the methods of mining, the present and future production from each section of the mine, and the condition and capacity of the rolling stock.

The increase in power and weight of mine locomotives and the improvements in car design permitting the movement of longer, heavier trips at greater speeds than heretofore, make it essential that the track work must be well designed, properly installed, and of good material. Short radius curves, depressed joints, horizontal kinks either at the joints or in the rail itself, curves put in by careless hand methods that allow the greater part of the curvature to be concentrated near one point, all make for slow, expensive transportation.

Some of the new steel mine cars are so rigid that they do not weave and adjust themselves to track irregularities. They are, therefore, subject to derailment when passing over uneven track. Even though derailment does not occur on such track, it is expensive track on which to operate, no matter how cheaply it was purchased and laid.

BAD TRACK is expensive track. It is wasteful of power. Whether it be out of alignment either vertically or horizontally, the power necessary to move cars is increased very materially. Every lurch of a car or a motor means frictional resistance. Every unnecessary or unduly sharp curve causes extra slippage of the wheels and increased power consumption. The track should be such that trips can be moved at full speed between terminals without the necessity of slowing down at numerous places or coming to complete stops. Starting a trip and accelerating to full speeds develop peak loads which use much power as well as have a serious effect on power demand charges. The fewer the peaks the motors are required to develop, the less the power cost and the less strain there is on the equipment.

I do not believe that sufficient consideration has been given to the bad effects that poor track has on mine car and motor equipment. It is, of course, obvious that low joints, bent rails, unsupported points, faulty turnouts, or any form of uneven or irregular track will produce strains and wear in cars that will result in heavier maintenance charges than would otherwise be necessary. But there is a damage to motors and electrical equipment that must make use of bad roadways. It is not so apparent, but it is just as real, and it is of a very serious nature. Serious, because damage to such equipment is so expensive to repair and can so easily tie up costly units that may be badly needed in service. Bad track increases tremendously the maintenance charges on all equipment that passes over it. Inefficient track is also wasteful of man power through slower trip speeds, derailments, coal spillage along the haulways, and other related evils necessitating more hours of work per ton of production.

The danger that besets life and limb on track of this kind must not be overlooked. Haulage accidents show up as a very heavy percentage of mine accidents, and it is a surety that any contributing cause to these is a very important matter. Tabulated reports of mine accidents show that those pertaining to haulage have the questionable honor of being second from the head of the list. A poorly fitted up switch, a derailment, a motor or car knocking out a roof support and a heavy hazard to life and property is the result. It is difficult to state what amount of saving can be made by putting the tracks of a mine into first-class condition as the expenses caused by bad track, while very real and very great, are often such that they do not show up in any tabulated form. However, any consideration of the foregoing must present convincing evidence that the transportation system of an operation should be in such a condition that coal can be transported over it safely, rapidly, with minimum power, and with minimum labor.

Next in importance to properly laid track is the maintenance of that track. An authority on track says that "Maintenance is the continual work of keeping in condition for proper service a structure subject to wear, damage, deterioration, and disturbance resulting from its use as well as from natural elements." Thus track maintenance includes tightening bolts and fastenings, replacing bad rails and ties, raising low joints, adjusting the track to line and surface, keeping curves true, repairing or replacing frogs and switches, inspecting and policing the track, and performing many other detail duties. Admitting the importance of these items, it is essential that they be handled on a systematic basis. Usually this work is best handled by an experienced individual or crew who both install new work and maintain the old.

THE SECURING of efficient transportation is a problem so important to modern mining that it must command the attention of any who would continue in this highly competitive field of modern industry. In the cases where transportation efficiency has not been secured the operator has lost that last 2 or 3 cent reduction in cost that might have been had.

There are many elements that have to do with the making of a good track system, any one of which, if neglected, lowers to some extent the efficiency of the system.

Perhaps there is nothing of more importance in the development of a good track system than the selection of the

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correct size of rail to be used. It is, of course, determined largely by the weight of the rolling stock passing over it. There are a number of rule-of-thumb methods of estimating the correct rail size when the weight of the heaviest load is known. For example, a rule of 10 pounds per yard for each gross ton load on each wheel has been frequently used, giving in the case of a 12-ton motor a wheel load of 3 tons and a rail weight of 30 pounds. This rule applies fairly well for room work, but gives results that are too light for other purposes.

Twenty-pound rail has long been popular in room work, but it has been found too light for heavy cutting and loading equipment. Thirty-pound rail has been found very satisfactory for room work where heavy equipment is in use. Thirty-ton Olroyd machines and Meyers Whaley shovels are operating in many mines on this weight of rail, as a number of mines when installing such machines have abandoned 20 and 25 pound rail in favor of 30 pound. On the basis of answers received from questionnaires sent out by the American Mining Congress, it can be said that 30 pounds is the most widely used room rail, 20 pounds second, and 25 pounds third.

Forty-pound rail serves very well for butt entries and 60 pounds is much used for main line. There are many mines using 40 pounds for main haulage, but the use of 60-pound rail vastly improves track conditions. It must be remembered that as the weight of a rail is increased, strength and stiffness increase at a much more rapid rate. The stiffness varies as the square of the weight—thus an increase of 33 1/3 percent in the weight of a rail from 30 to 40 pounds gives an increase in stiffness of 78 percent. The price per ton remaining practically constant, it can readily be seen that additional money spent for heavier rail brings a good return in stiffness and strength.

Heavier track is easier to maintain in alignment. To use a common expression, it is more inclined to stay put. Rails heavier than 60 pounds are in use for main haulage in some mines, but it seems that unless unusual circumstances prevail, 60-pound track can be so laid and maintained as to give excellent results under any but the most exceptional mine traffic. In considering the weight of rail to be used, the type of section must also be given due thought. A decision must be made as to whether the ASCE section or the ARA-B section will be used, as it is taken for granted that odd or bastard sections would be eliminated if at all possible. In the large sections such as 80 pounds or heavier, the ARA types have found favor because of the difficulty of properly rolling heavy rails with wide flanges such as the ASCE sections. In the sizes in more common use in mine haulage, this rolling difficulty does not apply, and by far the greater tonnage has been rolled in the ASCE section. This section, having a much wider base than the ARA-B sections, offers more resistance to sidewise thrusts tending to overturn it. It also provides a larger bearing surface with less tendency to cut into wood ties and for a given weight of rail offers more lateral stiffness. The use of the ASCE rail makes it possible to secure frogs and switches from manufacturers' stocks. I know of no manufacturer that carries equipment in stock made of ARA-B rail.

As these rails are laid it is preferable in general to use splice bars with the lighter rail and angle bars with the 40-pound and heavier rail. Where splice bars are used, a tie should be under the joint, but where angle bars are used, the joint should be midway between the two ties. An angle bar is designed to give, when properly bolted up, the same degree of stiffness at the joint as the unbroken rail itself gives, so that it is, therefore, better that there be no tie under an angle bar joint. There is now coming into use a combination splice-angle bar joint that is so designed that while not materially lessening the mechanical efficiency of the joint, it improves very greatly the electrical efficiency. A standard angle bar is used on one side of the rail, while on the other side is used a specially designed splice bar that is so made as to give sufficient stiffness and yet leave the top side of the rail flange free from obstruction. On this flange and within 2 or 3 inches of the end of the rail is welded a short bond having only a total length of 5 or 6 inches. This short bond, as compared to the usual length bond, greatly improves the electrical conductivity of the joint.

ALTHOUGH THE SUBJECT of ties has received very serious consideration, it by no means is as yet a closed book, especially as pertains to main haulage.

The swing has been toward steel ties for room work, and millions—I use the word advisedly—of steel room ties are in use and are giving entire satisfaction. Many mines could add to the production efficiency of steel room ties by a little more care in their selection and installation. The tie should obviously be selected with relation to the weight of rail with which it is to be used, and this carries the assumption that the rail size has been determined on after a careful consideration of the traffic that it is to carry. But some mines buy a heavy tie for very light rail, and vice versa; mainly because they happen to get started that way. Tie manufacturers can give intelligent recommendations as to the best tie-rail combinations, and they will gladly give them, because it is to their interest to have their customer receive economical satisfaction. Room ties should not be spaced over 4 feet, and a shorter spacing will give better results. Ties will be found in many rooms spaced 8 feet or more, but where this condition prevails, bent and broken rails, bent ties, and derailments are common. Steel ties are also used in great numbers on turnouts either with special ties at the switch and the remainder of the ties being standard ties interlaced to serve both tracks, or as a set of turnout ties, each of which is a special through tie. An effort has been made in past years to use steel ties for main-line haulage, but due to inadequate designs they did not prove entirely satisfactory. But in the last few years improved types have been brought out that meet the requirements, and so there is a growing demand for heavy main-line steel ties. Examples of main-line track laid with steel ties can now be found in many mines, track that retains its alignment as well as any track laid on heavy wood ties, and requiring less maintenance. Steel ties may require more careful blocking and tamping than wood ties so that the track-laying labor per tie is greater, yet due to the smaller number of ties, the track-laying labor per foot is no more. In the laying of the track, if wood ties are used it has been found necessary to usually lay them at close intervals, allowing only enough room between the ties to insert a shovel. This gives tamping space and facilitates tie renewal. Excellent results have been had from steel main-haulage ties spaced both 24 and 30 inches.

IN ADDITION to the very important essentials of alignment and surfacing that are necessary to efficient operation of a haulage system, must be added the essential of well-designed turnouts. It is known that a motor or a car can pass through a turnout made up of almost any conceivable combination of frog number and switch lengths, but best all-around results can be obtained from but one combination of frog and switch. When room service is being considered, the radius of the turnout is decided upon by a consideration of the length of wheel base, the angle of the rooms relative to the entry, the width of entry, the condition of the roof and the amount of cutting it is advisable to do on the corners of the room neck to clear the equipment used. Bad roof and the difficulty of maintaining a long unsupported opening dictates a short, sharp turnout. The answers to a questionnaire sent out indicate that a No. 2 turnout is in use by more mines than any other number of turnout. However, a No. 2 is too short for best operation of equipment having a 40-inch wheel base or over. In operations where such equipment is used, a No. 2½ turnout best serves the needs. The No. 2½ turnout is second in popularity according to the reports received. No. 1¾ room turnouts are used, especially with mule haulage, but if governing conditions as heretofore mentioned will permit, a No. 2 turnout is better. The three numbers adopted as standard by the A. M. C. for gathering are the No. 2, No. 2½, and No. 3. The proper turnouts for entry or main-line service are dictated by conditions of roof, type, and speed of traffic and space available. The A. M. C. recommends Nos. 3, 4, 5, or 6 for this service.

The frog angle alone does not establish the lead and radius of the turnout as many track workers believe. The toe distance, switch length, and switch angle are important controlling factors. So the matter of the switch itself must be carefully considered. The number of the frog having been decided on, it is obvious that a car passing over the turnout

will have to be deflected angularly from its original path an amount equal to the frog angle by the time it reaches the frog. It is equally true that the more smoothly this deflection is made the better operation will be secured. Therefore, the deflection must be made in as even increments as is possible. This means that the general line of the turnout as made up of a straight frog and a straight switch joined by a curved rail to which both frog and switch are tangent, should follow reasonably close the line that would be made by a simple curved turnout. The advantage given by the straight frog and switch being that the turnout may be used for either R. H. or L. H. and that manufacturers carry straight frog and switches in stock but not curved frogs and switches. As an example of the comparative efficiency of a straight frog and switch turnout as compared to a curved turnout, I have observed a No. 2½ turnout laid adjacent to a 50-foot radius turnout, serving the same traffic and showing the same smoothness of operation. After being used five years both types of turnouts showed the same amount of wear.

It is well that turnouts be laid out by standards developed by the engineering department or by the use of standard turnout tables that may be secured from any trackwork manufacturer. There is no known, easily applied rule by which the lead of turnouts may be figured with any degree of accuracy or uniformity. The various rule-of-thumb rules in common use by many track men give only very rough approximate results, giving inaccurate leads to the extent of from 1 to 8 feet, depending on the gauge and number of the turnout. The new A.M.C. standards give the formulae by which turnouts should be figured as well as tables of turnout leads for the commonly used gauges.

IN REVIEWING the experience that the various operations of the M. A. Hannah Company have had with their trackwork, R. L. Ireland, vice president, writes as follows: "Some years ago our mines went on the theory that 40-pound rail for main haulage, 16-pound and 20-pound rail for rooms, and a minimum of cost for installation and maintenance meant economy. The mine foremen were proud and therefore wouldn't admit that they were having frequent delays from derailments due to inadequate track. As far back as I can remember, certain track manufacturers advocated better track. They were like the life insurance men and the preacher, trying to give the mine operator something he needed but didn't want; but, like the life insurance men, they were persistent and, with the aid of the American Mining Congress as sponsor, the Standardization Committee on Mine Tracks M-7A came into being."

On this committee of which Mr. Ireland speaks were both manufacturers and coal mine operating men, and they worked diligently for years in trying to standardize track material for use in coal mines. Their work finally took concrete form in 1927 when standards were published by American Mining Congress after they had been approved by the American Engineers Standards Committee.

These standards included recommendations for gauge, dimensions for riveted plate and cast frogs, dimensions of clips, plates and braces, and specifications of switches. Continuing their work, the Standardization Committee developed a set of turnout tables giving uniform lead length for all weights of rail.

In 1931 this committee realized that some of its former recommendations made in 1927 were obsolete. It, therefore, decided that in addition to publishing standard turnout tables, it should revise the recommendations made in 1927. It divided turnouts into two categories; room turnouts and main haulage turnouts; and dropped from its recommendations such combinations of rail and frog numbers that were not in keeping with economy and efficiency. The committee in making its recommendations realized that many gauges, rails, and frog and switch combinations other than those recommended were in use in many places, but it felt that it was in keeping with progress and efficiency to submit only those items as standard that were representative of the best general practice.

The new standards recently published by the American Mining Congress represents the careful study of a large number of operators, combined with the technical skill of a large group of manufacturers, and furnishes the coal operator a set of specifications for the purchase of track material that, if followed, will show returns in the form of lower cost and a greater production.

CONTINUING, Mr. Ireland says: "We analyzed the actual cost of making track equipment in the blacksmith shop as well as the installation cost of this home-made non-interchangeable equipment, and soon came to the conclusion that it was cheaper to purchase not only standard manufactured frogs and switches but closure rails as well. It was difficult to convince our foremen that because a blacksmith made the frogs and switches between times, that 'they weren't costing us anything,' but when they found that a shop made turnout would keep the cars on the track and could be laid with a 50 percent saving in labor, they capitulated. We next tried out the steel turnout ties that certain manufacturers had developed and found out that they were not only economical but that they increased our efficiency in room work and that it paid us to buy our room turnouts complete with steel ties. We next turned our attention to the track, and found that where the track was in good alignment and free from surface bends we had less coal spillage. We found that by using 60-pound rail laid on ties uniformly spaced on 24-inch centers and ballasted with screened ¼ x 1-inch slag ballast we practically eliminated maintenance cost. After thus improving our track conditions we found that our tonnage showed an increase and our costs a decrease."

The manufacturing plant is in a position to help effect real economies. It is uneconomical to do manufacturing work at the mine that the factory is in a much better position to do. New material is ofttimes cheaper than repairs. If the repairing of certain track equipment is under consideration, it is well to carefully check this cost against the cost of new material. It is often the case that the user thinks that the benefits derived from the use of standard articles reacts more to the benefit of the manufacturer than to himself. Such, however, is not the case. A certain benefit does accrue to the manufacturer, but even more benefits react to the user.

Manufacturers of track material are glad to cooperate to the fullest extent with the users of such material in the matter of its design, selection, and use. The standards adopted by the American Mining Congress make it possible for manufacturers to carry in stock these standard materials, so that users may at once obtain all of the component parts needed to make up turnouts to meet any standard conditions.

In conclusion, may I again emphasize the danger, trouble, and expense that always accompanies badly designed, improperly installed, and poorly maintained track work and the consequent importance of a trackwork system that is carefully planned, well designed, properly installed, and adequately maintained. Whatever expense is entailed by so doing will be repaid in big dividends.

Power Economics in Coal Mining

UPON ANALYZING ELECTRICAL LOSSES, we find they may be properly grouped as follows: Overloaded power lines, grounds, improper loading of motors, losses due to excessive peaks, miscellaneous.

Overload on power distribution lines is usually noticeable, due to the loss of voltage at the receiving end. This is always the case if the loss is great enough. A typical case has had our attention recently. A 3-phase No. 0 copper 2,300-volt line 6,100 feet long supplied all power from the central outdoor substation to one of our mines. The average power factors of this line was approximately 80 percent lagging. With a peak load of 900 kw. and an average load of 600 kw., we found we had a power loss of 145 kw. on peak and 65 kw. on average load. By raising the voltage on this line to 11,000 volts the line losses were reduced to approximately 6 kw. on peak load and 2.6 kw. on average load. The saving in making this change, figured on a basis of $2 per hp. lost on peak alone, will amount to more than $4,000 per year.

Overloaded feeder and machine lines underground may cause similar electric losses. When the rail is depended upon for the negative return without a paralleling negative feeder, in direct current systems, the bonding should have

very close attention. We are all prone to use too small a rail bond. Just making a positive connection between the ends of the rails is not sufficient. Rail bonds should be of sufficient size to have not less than one-half, and preferably the same current-carrying capacity as the rails to which they are attached.

Grounds may vary from a mili-ampere leakage on insulators to a ground of several amperes without being detected. When rock dust and moisture are present the leakage may amount to as much as one-half ampere per insulator on a 250-volt d. c. circuit. Assuming two-tenths of an ampere per insulator, 100 insulators would have a 5-kw. loss, costing approximately $13 per month on peak and $4 on energy. Any leakage of current from a conductor through moist rock dust causes very rapid deterioration of the copper. We found gypsum dust (calcium sulphate) much more active in this respect than limestone (calcium carbonate), which we believe to be caused by an acid liberated by the gypsum when combined with water.

Underloading, or running of motors underspeed, reduces their efficiency. On the average, motors are about 90 percent efficient at full load and rated speed. A reduction of 25 percent in load lowers the efficiency approximately 2 percent, of 50 percent in load about 5 percent. Each reduction of 10 percent below the rated speed of the motor means a loss in efficiency of approximately 8 percent. This is especially true of the older types of motors. While these losses are not large, yet they are worthy of consideration when planning power drives. Probably as great, or greater, losses are to be found in the wires or cables supplying the motors. Low voltage at the motor means an increase in the amperage demand for a certain power output, which in turn means greater heat losses in the motors and wiring.

The greatest saving can be made by reducing peak demand, as this not only reduces the demand charge but also increases the load factor. Each horsepower reduction in peak demand means a saving of $2 or more in power cost.

Peak demand power load can be divided into three divisions:

First. Uniform demand; ventilating fans, tipples, pumps, etc.

Second. Slightly variable demand; coal cutters, drills, mechanical loaders, and gathering motors.

Third. Highly fluctuating demand; main haulage and hoists.

A reduction in the power requirements of equipment with a uniform load can only be through the proper loading of motors, as has already been explained.

Miscellaneous losses are many and varied. I merely suggest a few, such as:

Carelessness in turning out lights. (The power consumed by a 100-watt lighting globe will cost 27 cents if left on during the five minutes of maximum demand.)

Operating locomotives with brakes partially set.

Tight gauge of haulage tracks, especially on curves.

Insufficient or faulty lubrication of equipment.

Operating equipment when not necessary. (This may be especially true of shop machinery, air compressors, etc.)

Pumping during the known times of peak load requirements, when possible to do so at off-peak times.— *"Power Economics in Coal Mining," by F. E. Gleason, of the United States Fuel Company, Utah, 1932. Proceedings of the Rocky Mountain Coal Mining Institute.*

Cost of Metal Mining

THE UNITED STATES BUREAU OF MINES reports that in 1929 a total of 98,380,455 tons of ore was mined in the United States by underground methods from mines that have an annual production of more than $100,000. This tonnage, segregated by methods, is given in Table I.

Table I—United States Production by Methods in 1929

Method	Tons	Percent
Open stoping	35,186,673	36
Block caving	18,576,196	19
Top slicing	15,904,288	16
Shrinkage	11,034,148	11
Square set	7,819,062	8
Sublevel caving	7,303,976	7
Cut and fill	2,556,112	3
Total	98,380,455	100

Table II shows arithmetical averages of the costs of mining by the different methods for 81 mines, representing a substantially larger production than 36,000,000 tons of ore. The tonnages produced from the different mines have not entered the calculations of averages. A certain amount of discretion has been used in making these averages. For example, one mine, using the square-set method, reports a cost for one month of $9.50 per ton. Because of exceptionally difficult ground conditions, and the short period of time covered, this cost was eliminated in determining the average cost of square-set mining. In the data on the cost of shrinkage mining, the Alaska Juneau figure of 29 cents per ton has not been included in the average of the cost for this method. This cost is so remarkably low that it should not be included in establishing an average for the ordinary conditions of shrinkage mining.

Agreement is general that block caving is the lowest-cost method, and square-setting the highest, but there is some disagreement as to how the other methods rank. I admit that variation occurs in the cost of any one method, but believe that given average conditions for its application, costs will be more or less uniformly the same. The processes involved under a given set of conditions are identical. Policies of operations affect costs per ton much more than do the processes of operation.

Table II—Average of Mining Costs Per Ton by Various Methods

	Block caving, cost per ton	Open stoping, cost per ton	Iron country top slicing, cost per ton	Iron country sublevel caving, cost per ton	Western top slicing, cost per ton	Shrinkage, cost per ton	Cut and fill, cost per ton	Square setting, cost per ton
Stoping:								
Labor	$0.14	$0.31	$0.36	$0.36	$0.62	$0.75	$1.01	$1.44
Superintendence	0.02	0.03	0.03	0.03	0.08	0.09	0.11	0.11
Explosives	0.03	0.09	0.06	0.06	0.08	0.24	0.16	0.11
Timber	0.03	0.00	0.09	0.06	0.24	0.09	0.22	0.36
Air, drills, supplies	0.06	0.08	0.05	0.04	0.11	0.20	0.21	0.15
Power	0.01	0.03	0.02	....	0.03	0.12	0.06	0.07
Miscellaneous	0.01	0.04	0.05	0.02	0.14	0.13	0.21	0.19
Total stoping	$0.23	$0.50	$0.65	$0.56	$1.15	$1.46	$1.84	$2.28
Development	0.17	0.22	0.09	0.25	0.27	0.67	0.76	0.68
Transportation	0.12	0.27	0.14	0.33	0.15	0.43	0.42	0.44
General	0.13	0.10	0.16	0.10	0.14	0.13	0.41	0.40
Miscellaneous	0.09	0.08	0.04	0.06	0.11	0.12	0.20	0.61
Total mining	$0.75	$1.04	$1.07	$1.28	$1.79	$2.41	$3.68	$4.13
Number of mines	5	22	3	2	10	12	13	121

—Morris J. Elsing, "Engineering & Mining Journal," December, 1932.

Cost of Copper Mining by Block Caving

THE MIAMI MINE of the Miami Copper Company, at Miami, Ariz., has the distinction of having both the lowest cost and the greatest annual production of all of the block-caving mines. Production started early in 1911 and has been continuous since then. The first method employed was shrinkage with caving of pillars. Shrinkage stopes and pillars were 50 ft. wide, 200 to 500 ft. long, and 125 ft. high. Before the drawing of ore began, pillars were undercut on sublevels and caved and drawn with the shrinkage ore. This method produced 2,230,577 tons. For mining the highest-grade ore, the top-slicing method was used, and a total of 4,524,347 tons mined by this method. In 1916, each of these methods produced about 3,000 tons per day. By the end of 1919, top slicing was stopped and a new undercut block-caving method produced all the ore. With present practice, ore is recovered by undercutting blocks 150 x 150 ft. and 300 ft. high.

Ore consists of secondarily enriched cupriferous pyrite which occurs as seams and veinlets of chalcocite and also disseminated through altered brecciated silicified schist. The ore varies from a hard silicified to a soft kaolinized schist. The orebody is 3,500 ft. long and 2,700 ft. wide, with an average thickness of 325 ft. Barren capping varies from 250 to 500 ft. thick.

Detailed Costs Per Ton of Block-Caving Method, Miami Copper Company—1926-30

(Data from annual reports)

Item	1926	1927	1928	1929	1930
Development	$0.100	$0.100	$0.100	$0.100	$0.100
Stoping	0.118	0.146	0.156	0.163	0.174
Electric haulage	0.052	0.060	0.047	0.052	0.043
Pumping	0.002	0.002	0.002	0.002	0.001
General underground	0.011	0.012	0.011	0.011	0.009
Mine ventilation	0.017	0.017	0.014	0.015	0.013
Underground lighting	0.003	0.003	0.003	0.003	0.002
Hoisting, No. 5 shaft	0.033	0.034	0.029	0.030	0.024
Engineering and sampling	0.012	0.014	0.014	0.015	0.010
Mine accident	0.003	0.010	0.012	0.011	0.006
Mine surface	0.020	0.018	0.019	0.021	0.014
Totals	$0.371	$0.416	$0.407	$0.423	$0.396

—*Morris J. Elsing, "Engineering & Mining Journal," November,* 1932.

Mining Methods and Costs at Hartley Mine

METHODS EMPLOYED IN MINING the horizontal type of zinc-lead orebodies of the West Baxter area of the Tri-State zinc and lead district, is the subject of an interesting paper in the recent *Explosives Engineer.* Orebodies, in this district, locally termed "sheet-ground" bodies, with the relatively low working faces and low tenor of zinc and lead, require changes in the mining practice which is used in the balance of the district. In this deposit there are three distinct beds of mineralization to be considered. The upper bed, called the "O" bed, has a thickness of 8 ft. to 12 ft., which, as a rule, is mineralized throughout so as to be classed as commercial ore.

The mine workings are by the room-and-pillar method. The ore beds, as well as the overlying strata, are of such character as to be self-supporting over spans of from 30 ft. to 60 ft. Supporting pillars of ore are spaced on an average of 40 ft. from edge to edge, and vary in diameter from 20 to 30 ft. In the course of mining, care must be exercised not to break into the overhead flint stratum that is being carried as the roof. If this stratum is broken, falls come without warning and the only safeguard is to blast or pry down any roof that has been broken into.

All underground loading is done into round sheet-steel cans, which are 32 in. in diameter, 32 in. deep, and hold an average of 1,400 lb. each. Each can is transported to and from the shaft station on a low flat car. In the low ground all of the loading is done by hand, the shovelers working on a contract basis, and using No. 2 scoop shovels. The average loading ability of the Tri-State shoveler is 35 tons per 8-hr. shift.

The Tri-State district has for a long time been the scene of experimentation with power shovels and mechanical loading devices. Very few of the various machines tried out have proved to be commercial, with the result that mechanical loading is employed in only a few mines at this time. The power shovels used at the Hartley mine were developed at this property and have been found to fit into the operating program with a substantial saving in the cost of loading.

The machine used was developed from a light surface shovel of the boom-and-dipper-stick type that was already on the market. For surface use, this shovel was powered by a gasoline engine, but used in the mine this was replaced by a 15-h. p. electric motor. Other changes in the surface-type machine were made, such as cutting down the length of boom-and-dipper stick and a new type of dipper was designed for loading into the round cans. This shovel is operated by one man and can be used in a 9-ft. room. It has ample power to clear away boulders weighing several tons, and so far has proved economical.

Summary of Costs in Units of Labor, Power, and Supplies

Period covered: Six months.
Tons of ore mined and hoisted: 180,212.
Mining methods: Open rooms with pillar support.

A. Labor (man-hours per rock ton):		
Breaking (drilling and blasting)		0.229
Shoveling:		
Hand only	0.218	
Mechanical	0.160	
Average		0.198
Haulage and hoisting		.080
Supervision		.033
General (including steel sharpening)		.133
Total underground labor		0.673
Average tons per man-shift (underground)		11.88
Average tons per man-shift (surface)		198.50
Labor, percentage of total cost		58.20
B. Power and supplies per rock ton:		
Explosives, 40 percent ammonia (lb. per ton)		1.12
Power (horsepower-hours per ton):		
Air compression	2.43	
Hoisting	1.73	
Pumping, loading, etc.	1.50	
Total		5.66
Supplies and power, percentage of total cost		39.00

Summary of Costs

Period covered: Six months.
Tons of ore hoisted during period: 180,212. Mining method: Open rooms with pillar support.

Underground Costs per Ton of Ore Hoisted

	Labor	Supervision	Compressed air drills and steel	Power	Explosives	Other supplies	Total
Development*							
Mining	$0.3018		$0.0781	$0.0307	$0.1502	$0.0113	$0.5721
Transportation (underground)	.1123			.0298		.0096	.1517
General underground expense	.0261	$0.0250				.0117	.0628
Surface expense (applicable to underground)	.0415						.0415
Total	$0.4817	$0.0250	$0.0781	$0.0605	$0.1502	$0.0326	$0.8281

* No development work was done during this period.

—*Carl N. Anderson, "The Explosives Engineer," November, 1932.*

Subsidence from Anthracite Mining

H. W. MONTZ presented a paper, "Subsidence from Anthracite Mining," at the Anthracite Meeting of the A. I. M. E. at Hazelton, October 14. He has confined his activities to coal mining in the Northern Anthracite Field of Pennsylvania, where there is a densely populated community, housed largely over the mines. The surface, generally speaking, has become quite valuable, and therefore,

real economic problems have been introduced into the operation of the industry in this field. The coal measures in the Wyoming and Lackawanna Valleys are comparatively flat, with the exception of outcrops upon the adjacent mountains, and are covered with a blanket of wash from 10 to 300 ft. deep, extending along the major axis the entire length of the valley and almost the entire width. The wash is composed of beds of sand, clay, gravel and quicksand. This wash plays an important part in the study of the problem.

Mr. Montz believes insufficient data are at hand for depths greater than 500 ft. of rock cover, though such data would be valuable. He believes that complete exhaustion of a vein or bed under 800 ft. or more of rock, regardless of the thickness of the bed, is likely to cause some subsidence at the surface, though slight. His conclusions are based upon the thickness of the overlying rock structure, ignoring the depth of wash. Any movement, particularly vertical movement of the underlying and supporting rock, is transmitted to the overlying wash; and inasmuch as the wash does not have any beam action, it acts as a superimposed load and emphasizes the rock movement, which accordingly is transmitted to the surface. Because of the variable structure and depth of the wash, it is impossible to determine any definite movement of this material in relation to underground subsidence. Vertical subsidence or movement bears a direct relation to the vertical subsidence of the supporting rock and eventually ceases, as was indicated in some of the time-subsidence chart exhibits.

The value of a subsidence curve, Mr. Montz said, is almost incalculable in the predetermination of surface effect, in relation to (1) the physical effect upon improvements upon the surface, (2) the economics of the disturbance, and (3) safety. The subsidence curve may be used to determine, for example, the approximate subsidence at the surface which will follow the robbing of a 6-ft. vein with 400 ft. of rock cover. By consulting the curve it is indicated that the ultimate subsidence per foot of vein is 1.6 in., which multiplied by 6, the thickness of the bed or seam, determines the subsidence to be approximately 10 in.

Henry H. Otto, who collaborated with Mr. Montz in his investigation, showed and discussed some interesting slides illustrating the subsidence effects of robbing in the Northern Field near and the various steps taken to prevent and repair damage to the property when robbing. The average cost of robbing had been 6½ cents per ton. The study will be continued for a number of years and it is hoped to reduce the cost per ton to 3 or 4 cents for all coal recovered. He showed how structural steel was used to prevent damage to houses and said that the occupants were generally agreeable to robbing if they knew steel was to be used.
—H. W. Montz, in "Mining and Metallurgy," November, 1932.

GOVERNMENT DEPARTMENT RELEASES

PNEUMATIC TABLING OF COAL

THIS INVESTIGATION of the pneumatic tabling process of cleaning coal is an evaluation of influence of the three principal factors involved in gravity concentration—specific gravity, size, and shape of particles in the feed—on the separation accomplished by this process.

In summarizing the results of the work it is desirable to compare the influences of these three factors on pneumatic table performance with those brought out in a previous similar investigation of wet tabling. It was found that like its counterpart—the wet coal-washing table—the pneumatic table is a sizing device. Hence, as with the wet table, separation according to specific gravity. However, because the means for supplying part of the energy for stratification is different, the size separation is different. This difference between the wet and pneumatic table is due to the use of a transverse and nearly horizontal flow of wash water with the wet table and a vertical rising current of air with the pneumatic table. As a result, the manner of separation on the two devices is directly opposite, due to the different type of stratification involved. In general, the size of the particles of a given specific gravity discharged from the wet table becomes successively finer with increasing distance from the mechanism end of the table, and in a given zone the average size of the components increases with increase in their specific gravities. With the pneumatic table the reverse conditions occur. The size of the particles discharged becomes increasingly coarser as the refuse end of the table is approached and coarse coal is accompanied by finer impurities.

Obviously, then, the mechanism of the separation on the pneumatic table with respect to size is such that it can make a more efficient separation on a feed in which the impurities are coarser in average size than the coal than if the coal is coarser than the impurities. With the wet table the most efficient separation can be made if the impurities are finer than the coal.

Likewise, the separation according to shape of particle with the two types of concentrating tables is directly opposite. The previous investigation of the shape factor in wet tabling has shown that, in general, cubical shapes are discharged ahead of prismatic and flat shapes of the same specific gravity and square-mesh size. In stratifying behind the riffles of the wet tables the flakes occupy a position lower in the strata than the cubes. In this position the cubes are subjected to the cross flow of water and are less affected by the travel-inducing force supplied by the head motion, because they are farther from the deck; hence they are discharged first. On the pneumatic table the flat particles stratify at or near the top of the bed because for the same square-mesh size they are lighter and present more surface than cubes to the air currents rising vertically through the bed. In this position they are unsupported by the riffles and thus travel more rapidly than cubical shapes across and down the transverse slope of the deck to a discharge point. Hence, the pneumatic table concentrates flakes in the zones nearest the head-motion end and cubical particles in the zones nearest the refuse end of the table. Inasmuch as the flakiness of raw coal increases with increase in the specific gravity of its components this natural condition aids the wet table and hinders the pneumatic table in effecting a separation between coal and the impurities ordinarily associated with it.

SULPHUR AND PYRITES IN 1931

A STATISTICAL summary of sulphur and pyrites for the nations of the world together with a list of the sulphuric acid plants in the United States. A 17 percent decrease in sulphur is noted in 1931 from the preceding year.

"The world market for sulphur," says the bulletin, "is controlled by contract between the Silician Sulphur Consortium and the American exporters. The search for sulphur substitutes has had but slight effect on the consumption of sulphur. Stocks have increased in the principal producing countries. The United States contributes 83 percent of the sulphur, Italy 13 percent, and Japan 2 percent. Compared with 1930, the production of sulphur decreased 17 percent in the United States in 1931."

(*Bulletin by Robert H. Ridgeway; part of the publication "Mineral Resources of the United States."*)

POTASH RECOVERY FROM WYOMINGITE AND ALUNITE

A FIELD SURVEY was made of deposits as to accessibility for exploitation, probable location of treatment plants, source and cost of raw materials, and probable markets for products obtained from the potash recovery from Wyomingite and Alunite. Information is also given as to the patent situation concerning operating costs and processes having attractive financial possibilities.

(*By J. R. Thoenin.* 78 *pages and* 8 *illustrations.*)

ANALYSES OF MONTANA COALS

DATA IS GIVEN on Montana coals as to their production, markets and transportation. Coal samples and delivered coal are analyzed.

(*Technical paper.* 129 *pages and* 2 *illustrations.*)

MINING PETROLEUM BY UNDERGROUND METHODS

THIS IS A STUDY of methods of mining petroleum used in France and Germany and the possible application to depleted oil fields under American conditions. The bulletin concludes that where conditions are favorable, mining methods in depleted oil fields may bring large financial returns and recover oil that otherwise might be lost.

(*By G. S. Rice.* 159 *pages and* 38 *illustrations.*)

COMPARISON OF SMALL AND LARGE SCALE EXPERIMENTAL CARBONIZING APPARATUS

A STUDY was made of the Pittsburgh bed coal from Allison Mine, Fayette County, Pa., as compared with a coal from the Michel Mine, British Columbia, in connection with small and large scale experimental carbonizing apparatus.

(*By A. C. Fieldner, J. D. Davis, E. B. Kester, W. A. Selvig, D. A. Reynolds, and F. W. Jung.* 34 *pages and* 23 *illustrations.*)

RADIUM SUPPLY AND NEED

THERE ARE 124.7 grams of radium owned by 710 individuals, companies and hospitals, and they estimate a need of 117.4 grams more, according to replies from a Bureau of Mines questionnaire addressed to 6,600 hospitals, clinics, physicians, and companies supplying radium. It is estimated 80,000 patients are treated annually with radium. New York State has the largest amount reported with 29,800 milligrams.

Geological Survey Publications

GEOLOGIC STUDY OF LOWER RIO GRANDE REGION

THIS IS A REPORT of a reconnaissance survey made in three seasons over an area of 13,000 square miles along the Rio Grande between Uvalde and Brownsville, Texas. Information about the development of several oil and gas fields is included. The geography and topography of the region is discussed with descriptions of the tertiary and quarternary formations. Many samples are analyzed, obtained from drill holes, together with diognostic fossils. A geologic map, scale 1 to 500,000, is included.

(*By A. C. Trowbridge.* 265 *pages,* 45 *plates and* 76 *figures.*)

GLACIAL GEOLOGY OF EASTERN MONTANA

THIS DESCRIBES the local and regional relations of the benches, and numerous mountain glaciers, the Keewatin ice sheet of the area, drift deposits, and the drainage changes in the upper Missouri and Yellowstone rivers.

(*By W. C. Alden.* 133 *pages,* 51 *plates and* 19 *figures.*)

THE FOLLOWING information circulars and reports of investigations were published by the United States Bureau of Mines:

METHODS AND COSTS OF DREDGING AURIFEROUS GRAVELS AT LANCHA PLANA, AMADOR COUNTY, CALIFORNIA—By Charles G. Patnom.

DESCRIBING the methods of dredging and treatment of gold-bearing gravels at the Lancha Plana Gold Dredging Company's dredge.

MINING METHODS AND COSTS AT THE NEW CORNELIA BRANCH, PHELPS DODGE CORPORATION, AJO, ARIZONA—By George R. Ingham and Alfred T. Barr.

DESCRIBING mining practice at Ajo, Ariz., where the New Cornelia Branch of the Phelps Dodge Corporation mines copper ore from an open pit and operates a concentrator for the treatment of the ore thus mined.

THE EFFECT OF THE CRIMPED-PAPER ENDS ON CARTRIDGES OF PERMISSIBLE EXPLOSIVES IN PROPAGATING DETONATION—By D. B. Gawthrop.

SANITARY SURVEYS OF THE COAL-MINING, METAL-MINING, AND SMELTER TOWNS OF UTAH—By Arthur L. Murray.

PRESSURE LOSSES DUE TO BENDS AND AREA CHANGES IN MINE AIRWAYS—By G. E. McElroy.

COMPOSITION OF THE FRACTIONS OF PRIMARY AND HIGH-TEMPERATURE TAR—By E. B. Kester and W. D. Pohle.

MINING STATUTES OF THE STATE OF PENNSYLVANIA (Summarized)—By J. A. Huff and V. V. Baker.

PRESENTING in brief form the statutory provisions of Pennsylvania regarding mining operations, in force at the end of the 1931 session of the legislature.

MINING METHODS AND COSTS AT FRESNILLO, ZACATECAS, MEXICO—By A. Livingston.

DISCUSSION of operations relating to the production of oxidized silver ores.

ECONOMICS OF POTASH RECOVERY FROM WYOMINGITE AND ALUNITE—By J. R. Thoenen.

MINING LAWS OF NORWAY—By E. P. Youngman.

MINERAL PRODUCTION OF THE WORLD, 1924-1929—By L. M. Jones.

STATISTICAL MICROSCOPIC EXAMINATION OF MILL PRODUCTS OF THE COPPER QUEEN CONCENTRATOR, OF THE PHELPS DODGE CORPORATION, BISBEE, ARIZONA—By R. E. Head, Arthur L. Crawford, F. E. Thackwell and Glen Burgener.

EMBODYING the results of a detailed statistical microscopic study of the mill feeds and flotation products of the Copper Queen concentrator of the Phelps Dodge Corporation, Copper Queen Branch, Bisbee, Ariz.

COMPRESSED AIR FOR OPERATING MODERN COAL-MINING EQUIPMENT—By R. D. Currie.

DESCRIBING the use of compressed air for this purpose by the Jamison Coal and Coke Co. at its Mine 8, near Fairmont, W. Va.

FALLS OF ROOF AND COAL IN THE BOOK CLIFFS AND WASATCH PLATEAU COAL FIELDS OF UTAH—By Herbert Tomlinson.

SUMMARY of the data obtained at 12 mines, representing the various physical characteristics of the principal coal beds and indicative of approximately 70 percent of the total production of Utah.

MINING METHODS AND COSTS AT VANADIUM MINE—By Blair Burwell.

DESCRIBING the method of mining a deposit of vanadium ore, near Rifle, Colo.

MINE ROOF OF THE PITTSBURGH COAL BED—By J. W. Paul and L. N. Plein.

THIS STUDY covers typical operating practice in the Pittsburgh Coal Bed, with sketches showing conditions encountered.

A 36-page discussion of milling costs and methods at a Flat River (Mo.) mill describing equipment, operation, and costs at the mill which treats 5,000 tons of lead ore daily by table flotation and concentration.

PROTECTION AND THE MINING INDUSTRY

(*Continued from page* 12)

represent the same constituents that have been represented heretofore and that their policies will be for the furtherance of the best interests of the American people. It is not reasonable to assume that any necessity of protection for these industries and the workers in them will be abandoned. The principle of protection for the products of the mining industry was supported with equal enthusiasm by the members of both parties both in 1922 and 1930. Had it not been for the support of both parties it is safe to say that not one of these protective tariffs would have been in the law. This is also true of the special excise items affecting mineral industries in the tax law of 1932. The mining industry should expect the assurance of the maintenance of those rates of protective tariff which it shows to be necessary in any possible new tariff law.

GOVERNMENT PUBLICATIONS

President's Message to Congress

PRESIDENT HOOVER in his message to the short session of Congress on December 7 recommended a curtailment in the expenses of the Federal Government of $580,000,000. The total amount recommended for the fiscal year beginning July 1, 1933, was $3,790,425,200 based on the enactment of legislation to continue the Federal gasoline tax, estimated to return $137,000,000 annually, and the partial replacement of the present manufacturers' excise taxes by a general tax (excluding food) estimated, at a 2¼ percent rate, to return $355,000,000.

The budget as recommended shows an estimated deficit for the fiscal year ending in 1934 of $307,192,187.

The chief savings in the budget presented to Congress are a discontinuation of the public works program in a large measure, $127,000,000 deducted from benefits to veterans, and $55,000,000 cuts in pay of Government employes.

As compared with expenditures for the fiscal year ending July 1, 1933, the following deductions or increased (minus or plus) are made in Government departments: Legislative Establishment (Congress), plus $2,266,787; Executive and Independent Offices, minus $7,830,671; Veterans Administration, plus $40,512,834; Agriculture, minus $199,068,327; Commerce, minus $6,850,058 (the Bureau of Mines is reduced $80,325 with a total budget estimate of $2,064,530); Interior, minus $23,134,555; Justice, minus $913,513; Labor, plus $468,575; State, minus $686,166; Navy, minus $27,500,000; Post Office, minus $58,000,000; Treasury, minus $85,166,040; War, minus $103,595,158; District of Columbia, minus $4,754,352.

ANNUAL REPORTS

Labor Department

THE ANNUAL REPORT of the Secretary of Labor states that wage earners and their families are the chief buying power of the land. It follows necessarily that with the great numbers now unemployed, the purchasing power of our people has been drastically curtailed, thus checking the flow of the streams into the channels of trade, reducing the products of manufacturers and the consumption of the products of the farm. A history is given of the employment, immigration, conciliation, labor statistics, naturalization, children's bureau, women's bureau, and housing corporation activities of the bureau.

Commerce Department

ECONOMIC CONDITIONS in the United States have been influenced by international developments, says the report of the Secretary of Commerce. Burdensome stocks and slackening of demand resulted in continued pressure on the price structure. The general level of wholesale prices receded. These and many other interesting comments are included in the report together with comments on prices, agriculture, construction, transportation, banking and finance, and foreign trade, as affecting the general economic situation. The elimination of waste in industry is considered in all its details of home ownership and construction, domestic marketing, simplified practice, certificatcn and labeling, and commercial standards. Scientific research is described as well as the utilization and conservation of natural resources. The work of the Bureau of Mines is complimented. Human safety in all its phases is discussed. A resume of the progress in civil aeronautics is given.

The Geological Survey

THE ANNUAL REPORT of the Director of the United States Geological Survey for the fiscal year ending June 30, 1932, shows the following minerals produced from leases, licenses and permits on public lands for the fiscal years of 1931 and 1932:

Amounts of Minerals Produced from Public Lands

	Fiscal Year 1931	Fiscal Year 1932
Coal	3,053,189 tons	2,880,448 tons
Phosphate	69,055 "	33,099 "
Potassium	4,727 "	45,967 "
Sodium	30,257 "	32,895 "
Petroleum	23,821,111 bbls.	26,454,217 bbls.
Natural gas	41,962,184 M cu. ft.	50,876,816 M cu. ft.

The coal produced from public lands was mined from the following states:

Coal by States

	Fiscal Year 1931	Fiscal Year 1932
Alaska	112,962 tons	101,168 tons
Alabama	121,002 "	81,630 "
Colorado	396,389 "	342,551 "
Montana	114,929 "	192,432 "
New Mexico	50,713 "	45,414 "
North Dakota	363,476 "	427,199 "
Utah	830,187 "	767,553 "
Washington	25,461 "	44,190 "
Wyoming	1,035,557 "	871,485 "
Other States	2,509 "	6,821 "

The report also points out that a large portion of the work accomplished was done in cooperation with the states, which furnished two-fifths of the money expended. The work comprises geologic investigations, explorations in Alaska, topographic mapping, investigations of water resources, work in the classifying and leasing of public lands, and publication of the results of investigations.

The report states that a new American industry, the mining of potash, has been developed during the depression. A five-year program of drilling for potash has just been completed by the Survey and the Bureau of Mines. In all, 24 core tests were made, 13 in New Mexico, 10 in Texas, and 1 in Utah. Regular shipments of 25 to 30 percent untreated potash are being made from a mine in New Mexico. In a large measure this program is the result of efforts made by the American Mining Congress in getting the drilling program started.

Department of the Interior

THE ANNUAL REPORT of the Department of Interior is interesting especially as to the General Land Office and the Geological Survey.

The General Land Office reports in detail on the receipts and expenditures on the public lands through sales, leases, etc. Bonuses, royalties and rentals secured from leasing and mineral rights on the public domain totaled $3,236,978; Wyoming led with California a close second. The state receives 37½ percent of receipts, bonuses, royalties, and rentals, the reclamation fund 52½ percent, and 10 percent remains in the Treasury. Field service includes the suppression of forest fires, cartographic engineering service, and other activities. There were 1,150 actions taken in cases and only 21 cases awaited consideration at the close of the year. There were patented 282 mineral cases. It is interesting to note that 6,800 acres were leased in three potash cases.

The Bureau of Mines

THE ANNUAL REPORT of Scott Turner, director, Bureau of Mines, shows that for the year ending June 30, 1932, expenditures were $2,431,628.07. The organization is reported to be in as good shape as might be expected when the loss of men and resources are taken into account.

The activities of the 17 divisions of the bureau are given in detail.

Increased laboratory facilities are cited as need to develop better efficiency in research activities, particularly in cooperative work. An experiment station in Maryland, adjoining Washington, is given as an outstanding need.

There are 763 full-time employes in the Bureau of Mines, including a number of persons who are paid only when actu-

ally employed, such as consulting engineers, chemists, etc. Property records of the Bureau of Mines show a total of more than 4½ million dollars valuation. The property is in Washington and the various field stations and offices of the bureau.

The work of the bureau is made available in reports prepared in printed and other form. More than 70,000 letters annually are answered by the Information Division alone, which indicates the wide demand for the reports of the bureau.

The safety work of the Bureau of Mines stands out as a marked accomplishment of the year. Mining shows an improved record in safety for the year, and the bureau believes that its many activities for safety and health are having a vital influence for good in the mining industry. Due to decreased appropriations, it is thought that four of the ten mine-rescue cars will have to be abandoned temporarily.

General Land Office Report

THE ANNUAL REPORT of the General Land Office gives a total of the domain over which the office holds sway as 777,213,644 acres, of which 399,047,884 acres are in the United States and 378,165,760 acres are in Alaska. Vacant land subject to public land laws amounts to 173,318,246 acres, and national forests are 133,800,000 acres. Mineral lands reserved in patents other than homestead laws are 23,440,896 acres.

Bureau of Internal Revenue

NEW REGULATION 78—CONSOLIDATED RETURNS

STOCK SALE LOSSES sustained by an affiliated corporation in a group which makes a consolidated income tax return may be deducted from gains made by another affiliated member in computing the consolidated taxable income under Regulations 78 of the Bureau of Internal Revenue issued December 20. The regulations are applicable to the year 1932 and subsequent years. This new provision on the regulation may cause many affiliated corporations to find the filing of consolidated returns advantageous in spite of the additional ¾ percent levy under the Revenue Act of 1932. Other provisions of the newly announced regulation permit carry-over of losses for one instead of two years, and the inclusion of foreign affiliates in the consolidated returns. Stock losses only may be used to offset stock gains and bond losses to offset bond gains, a new distinction laid down for the first time in the Revenue Act of 1932.

TAX ON ELECTRICITY IN CLOSED PLANTS

TAXABILITY of electrical energy furnished closed industrial plants (Regulations 42, Article 40; S. T. 590) imposed under Section 616 of the Revenue Act of 1932 is discussed by the Internal Revenue Department under the following circumstances: The X Company owns a number of idle manufacturing plants which are equipped with transformers, thereby incurring a minimum charge in excess of the regular charge for electrical energy actually consumed by these plants during their period of inactivity. Electrical energy furnished for industrial consumption is not subject to the tax, but where such energy is furnished to a plant during the period of time when its industrial activities have temporarily or permanently ceased, the electrical energy so furnished is deemed to be commercial in its scope, irrespective of whether any of the energy paid for is actually used, and the charge paid therefor is subject to the tax imposed in Section 616 of the Revenue Act of 1932.

DEPLETION ALLOWANCE

THE UNITED STATES Board of Tax Appeals on November 18 decided that where a corporation acquired, in nontaxable reorganization, certain oil leases from its predecessor, a trust taxable as a corporation, it is not to be entitled to compute depletion upon the basis of discovery value when discovery was by such predecessor.

ADVERSE MINING CLAIM, ETC.

IN THE CASE of the Chichagoff Mining Company before the General Land Office, Assistant Secretary Edwards held that where in an adverse suit brought under the mining law it is the judgment of the court that neither the adverse claimant nor the applicant for patent is entitled to the possession of the area in controversy, such judgment is conclusive and the patent proceedings are at an end as to such area and, if as a result of such judgment outlying segments of different locations embraced in the application do not form one contiguous body of land, the applicant will be required to elect which of such incontiguous tracts he will retain in his application, but outlying segments of one or more claims which form one body of land may be embraced in one application.

In another ruling: Where a tunnel is run upon unappropriated public land in Alaska, the laws of which Territory recognize the right to condemn land for mining purposes, and the tunnel is made for the purpose and is a means of developing a mining claim, the value of the tunnel may be credited as acceptable expenditure in support of a patent application for such claim as though the tunnel were located within the claim.

In another ruling: Republication and posting anew for outlying segments of mining claims, not lost in an adverse suit, which the applicant for patent may elect to retain in his application will not be required where defects in the application are curable by supplemental showings and no adverse rights by a stranger can be acquired to those tracts by relocation.

In another ruling: After the commencement and during the pendency of adverse proceedings against a mining claim the applicant for patent is not obligated to maintain annual assessment work.

Tariff Commission Hearings

Coming hearings of interest to the mining industry to be held before the Tariff Commission are as follows:

QUARRIES AND QUARRY TILE HEARING

THE TARIFF COMMISSION has ordered an investigation of quarries and quarry tile to determine the differences in cost of production of United States products and those coming from competing foreign countries.

EVALUATING IMPORTS HEARINGS

THE TARIFF COMMISSION will hold public hearings on the methods used in the valuation of various imported commodities. These methods are important in the assessment of tariff rates. A uniform basis for valuation has not been found possible, according to the Commission, but where the imported article finds a counterpart in domestic production uniform valuation can be found practicable. The present basis used for most imports is the "foreign value." There are many cases where this method of valuation can not be used. Hearings will be held on January 20, 1933. Representatives of domestic industries and importers will be in atendance. Agitation for a change in the method of evaluating imports was manifested in Congress in 1922, when a bill passed by the House failed of enactment establishing the "American value" as the basis for assessing imports. By "American value" is meant the selling price in the United States of a domestic competitive article. Under the 1930 Tariff Act, further interest in the establishment of the "American value" basis was shown, and a study was made of this method of valuation that filled a report of 1,000 pages. In 1932, the President designated the Tariff Commission in cooperation with other Government agencies to carry out the study. The "landed cost" is used in many foreign countries. This is the cost landed at the dock in the importing country and includes the foreign price plus transportation and other charges to the country of importation. The "domestic value" is the selling price in the United States of the imported article, duty and other charges paid as defined in the Tariff Act.

PHOSPHATES AND APATITE INVESTIGATION

UPON COMPLAINT of the International Agricultural Corporation and the American Cynamid Co. of New York an investigation (Section 337, Docket No. 3) has been ordered, under Section 337 of the Tariff Act of 1930, on unfair acts of importers of phosphates and apatite, under patents on flotation processes. Complaint was made against the Standard Wholesale Phosphate and Acid Works of Baltimore, Md., and the Amtorg Trading Co. of New York City. Answers must be filed with the Tariff Commission by January 19, 1933.

ASSOCIATION ACTIVITIES

Annual Meeting of The American Mining Congress

FOLLOWING ITS ECONOMY POLICY of the past three years, The American Mining Congress, converted its annual meeting into a series of small group conferences, confined to its membership, and to its committees. It has believed that results can be accomplished without the expense of a big convention, and accordingly presented its major problems to its members by letter. The Members' Meeting held in Washington, D. C., at the Mayflower Hotel, December 15-16, brought together representatives of the organization's important committees, such as Mineral Tariffs, Taxation, Modernized Production Methods, and Stabilization of Natural Resources. In the latter group the American Mining Congress has had a national committee functioning for the past three years, with Mr. Robert E. Tally, Vice President United Verde Copper Company, as chairman. The committee has been fully representative of all of the natural resource industries, and while no definite recommendations have been made, the result has been a better understanding of the conditions each industry has had to face.

At the opening conference, when silver, and mineral tariffs were discussed, the speakers were the Hon. Key Pittman, United States Senator from Nevada (Senator Pittman's remarks will be presented in full in this JOURNAL, with its February issue) and Herbert Wilson Smith, Union Carbide and Carbon Corporation, an authority on the subject of mineral tariffs. (Mr. Smith's paper is carried in full in this issue.)

The second conference, when Modernized Mining was discussed, had as its speakers the Hon. Scott Turner, Director, United States Bureau of Mines, and W. J. Priestly, vice president, Electro Metallurgical Company of America. Joseph Dilworth, of the National Committee on Industrial Rehabilitation, told something of the work his committee has in hand.

The third conference was devoted exclusively to Mineral Taxation, with the Hon. A. A. Ballantine, Under Secretary of the Treasury, presenting the view of the Government. (Mr. Ballantine's paper will appear in full in our February issue.) Short discussions on various phases of tax matters were presented by Paul Armitage, of Douglas, Armitage & McCann, attorneys; H. B. Fernald, of Loomis, Suffern & Fernald, attorneys; W. D. Motter, Jr., of the Chile Exploration Company; Walter Staub, of Lybrand, Ross Bros. & Montgomery; and C. E. Alvord, of Donovan, Bond & Alvord.

The fourth conference was devoted to Stabilization of Natural Resources. Hon. David J. Lewis, Congressman from Maryland, explained the ideas back of the Hayden-Lewis coal bill, which is patterned after the British Coal Mines Act. Paul Weir, of Bell & Zoller Coal and Mining Company, of Chicago, presented a view of the operating industry. Robt. E. Tally presented copper's viewpoint; Ralph M. Roosevelt, Eagle Picher Lead Company, presented the view of zinc; and Dr. E. W. Parker, of the Anthracite Bureau of Information, discussed anthracite.

Officers elected for 1933 are as follows:

President—

J. B. Warriner, president, Lehigh Navigation Coal Co.

Vice presidents—

D. D. Moffat, vice president, Utah Copper Co.

J. B. Putnam, Pickands-Mather & Co.

Clinton H. Crane, president, St. Joseph Lead Co.

Directors—

Louis S. Cates, president, Phelps Dodge Corporation.

Robert E. Tally, vice president, United Verde Copper Co.

Donald B. Gillies, president, Corrigan, McKinney Steel Co.

Paul Weir, vice president, Bell & Zoller Coal & Mining Co.

Donald A. Callahan, president, Callahan Lead-Zinc Co.

Howard I. Young, president, American Lead, Zinc & Smelt. Co.

A. E. Bendelari, president, Eagle Picher Lead Co.

W. J. Jenkins, president, Consolidated Coal Co., of St. Louis.

C. J. Ramsburg, vice president, the Koppers Co.

Northwest Mining Association Holds Meeting

THE THIRTY-EIGHTH annual convention of the Northwest Mining Association was held at Spokane, Wash., December 15-17, 1932. Topics discussed were Blue Sky Legislation, the Remonetization of Silver, the furtherance of the work of the Geological Surveys, topographic mapping. The recent overturn in politics has sent large numbers of new and inexperienced members to the legislatures of Washington, Idaho, Oregon, and Montana, and made important changes in the congressional delegations from this district, according to statements by Leon Starmont, secretary of the association. The new representatives were invited to attend the meeting and learn the views of the mining industry on important matters affecting it.

An international economic conference was urged for the earliest possible moment, and resolutions discouraged efforts to remove the currencies of the world from their metallic base by the substitution of greenbacks. Included in the resolutions was one urging that the Bureau of Mines be transferred to the Department of Interior, and another recorded opposition to any legislation which would affect a severance between surface and subsurface rights. Further legislation in connection with mine depletion was also urged.

Robert T. Banks was reelected president of the association, with other officers as follows: Donald A. Callahan, of Wallace, vice president; F. Cushing Moore, Spokane mining engineer, treasurer; and Leon Starmont, secretary. Frank M. Smith was elected the fifth member of the executive committee.

Indiana Coal Mining Institute

THE INDIANA COAL MINING INSTITUTE held its second annual meeting at Terre Haute, Ind., early in December. Papers presented centered around accident-prevention work and power problems. The following officers were elected: Wesley Harris, Bicknell Coal Co., president; James White, Peabody Coal Co., first vice president; P. L. Donie, Little Betty Mining Co. (who is a member of the N. C. A. Safety Committee), second vice president; B. H. Schull, Binkley Mining Co., third vice president; and Harvey Cartwright, commissioner, Indiana Coal Operators Association, secretary. The managing directors of the institute are: Messrs. H. P. Smith, C. A. Herbert, H. G. Conrad, A. C. Dally, R. A. Templeton, Thomas Faulds, and John Hessler.

Coal Mining Institute of America

THE ANNUAL MEETING of the Coal Mining Institute of America was held at Pittsburgh, December 15-16, 1932. An excellent program was presented, dealing with practical operating problems, including discussions on safety and accident prevention and coal preparation. The speakers included C. L. Lutton, safety director, H. C. Frick Coke Co.; J. B. Morrow, preparation engineer, Pittsburgh Coal Co.; F. E. Bedale, safety engineer, Consolidation Coal Co.; and R. Dawson Hall, editor, *Coal Age*. The following officers were elected: Frank B. Dunbar, Mather Collieries, president, succeeding Dean E. A. Holbrook. C. L. Lutton, H. C. Frick Coke Co.; G. W. Riggs, Mine Safety Appliances Co.; George S. McCaa, state mine inspector, were elected vice presidents; and G. W. Grove was reelected secretary.

Manufacturers Section, Coal Division, The American Mining Congress

THE SEMI-ANNUAL MEETING of the Manufacturers' Section of the Coal Division, the American Mining Congress, was held at Washington, D. C., December 17. The principle item to come before the meeting was the selection of the time and place of holding the annual spring meeting and convention. The Board of Governors of the Division, representing both operator and manufacturer, decided to postpone decision until the middle of January, when a special meeting will be held of the officially appointed subcommittee, which will report on the exposition. Cities actively interested in securing the convention and exposition are: Chicago, Pittsburgh, Cleveland, Louisville, Ky., and Columbus, Ohio. Invitations were received from a very large number of cities, but those to receive special consideration are enumerated above. A special report was presented by the secretary of the division, which showed a healthy situation and a tremendous interest in the work of the division, which includes, in addition to its exposition, national committees on taxation, recommended American practice for coal mine operation, and the committee on new developments. Reports indicate that each of the projects is progressing satisfactorily.

Winding Gulf Operators Association

AT THE RECENT annual meeting of the Winding Gulf Operators Association, all officers from the current year were reelected. They include: President, A. W. Laing, vice president, Morrison Coal Co., Charleston, W. Va.; vice president, L. T. Putman, general superintendent, Raleigh-Wyoming Mining Co., Berkley, W. Va.; and secretary-treasurer, P. C. Graney, general manager, C. C. B. Smokeless Coal Co., Mt. Hope, W. Va. An interesting program included discussion of many of the major operating problems of the district.

New River Coal Operators Association

THE ANNUAL MEETING of the New River Coal Operators Association was held at Mt. Hope, W. Va., December 6. R. H. Morris was elected president, and R. J. Burmeister was reelected vice president. P. M. Snyder was reelected treasurer, and S. C. Higgins was reelected secretary. The meeting was specialized by reports of various committees, W. G. Capperton presenting a comprehensive report on the activities of the organization, with particular reference to marketing. Other speakers were: M. L. Garvey, the New River Co.; S. A. Scott, the New River Co.; and S. C. Higgins.

Operators Association of Williamson Field

THE OPERATORS ASSOCIATION of Williamson Field recently held their twentieth annual meeting at Williamson, W. Va. Special attention was given to the problems immediately confronting the operators in this field, both from the local and national viewpoint. The newly elected officers are: President, L. E. Woods, president, Crystal Block Coal Co., Huntington, W. Va.; vice president, George W. Coffey, president, War Eagle Coal Co., War Eagle, W. Va.; treasurer, W. S. Leckie, president, Leckie Collieries, Aflex, Ky.; and secretary, Joseph J. Ardigo. The new board of directors is composed of Messrs. George Baker, general manager, Tierney Mining Co., Stone, Ky.; George Dunglison, Jr., N. & W. Railway Fuel Department, Bluefield, W. Va.; C. A. Hamill, assistant general manager, Sycamore Coal Co., Cinderella, W. Va.; L. D. Huestis, Wheeling Steel Corporation, Portsmouth, Ohio; T. H. Huddy, general manager, Sudduth Fuel Co., Williamson, W. Va.; J. D. McLaughlin, general manager, Earlston Coal Co., Kermit, W. Va.; W. A. Richards, president, Majestic Collieries Co., Bluefield, W. Va.; and E. E. Ritter, Red Jacket Coal Co., Red Jacket, W. Va.

Colorado Mining Association

THE COLORADO MINING ASSOCIATION has issued official call for its twentieth annual meeting, to be held in conjunction with the meeting of the Colorado Chapter of the American Mining Congress, in Denver, Colo., January 18-19, 1933. Each mining county in the state has been asked to send five or more delegates. County mining organizations have been asked to appoint special delegates. A special program is being arranged which will end with the annual famous Sow-Belly Dinner. Jesse F. McDonald, president, the Down Town Mines Co., governor of the Colorado Chapter of the American Mining Congress, and C. Lorimer Colburn, secretary of both associations, are responsible for the development of the program.

Alabama Mining Institute

THE ALABAMA MINING INSTITUTE held its annual meeting in December. All officers of the previous year were reelected, and an interesting program was presented by James L. Davidson, secretary, which included discussion of the Kelly-Davis Coal Control Bill. Hugh Morrow, president, Sloss-Sheffield Steel & Iron Co., reelected as president, made a report on the activities of the institute during the current year, which presented real accomplishment. The following were elected members of the board for a term of three years: P. Toulmin, president, Lehigh Coal Co.; D. A. Thomas, president, Montevallo Coal Mining Co.; W. H. Oldham, vice president, Republic Steel Corporation. Other members of the board are: Milton H. Fies, V. P. DeBardeeben Coal Corp.; L. E. Goehegan, Gulf States Steel Co.; R. T. Daniel, Alta Coal Co.; C. L. Moss, Moss & McCormack; Horace Hammond, president, Alabama By-Products Corp.; and G. F. Peter, president, Southern C. & C. Co.

West Virginia Coal Mining Institute

THE TWENTY-FIFTH annual meeting of the West Virginia Coal Mining Institute was held at Charleston, W. Va., December 6-7, 1932. M. L. Garvey, the New River Company, was elected president, succeeding E. H. Shriver. Among the interesting papers presented were the following: "Reaction of Employe to Accident Prevention Measures," "Economies and Forecasting in Mine Labor Costs," "Some Important Factors Affecting Gathering Haulage," "Transportation and Coal Industry," "Analysis and By-Product Coking Tests of Some West Virginia Coals." C. B. Huntress, secretary, National Coal Association, was speaker at the annual dinner. Among those presenting papers were: G. Y. Thomas, division superintendent, C. C. & B. Smokeless Coal Co.; G. S. Brackett, Consolidation Coal Company; D. L. McElroy, University of West Virginia; S. C. Higgins, secretary, New River Coal Operators Association.

1933 Meeting, National Coal Association

THERE APPEARS TO BE a growing opinion in the industry that, because of the exposition in Chicago, where there will be numerous exhibits of heating appliances for the use of coal, electricity, gas, and oil, it would be advisable to hold the 1933 meeting of the National Coal Association in that city. The personnel of the annual meeting committee will be announced shortly, and a meeting will likely be held next month.

Among the advocates of convening in Chicago are numerous retailers, who plan to attend the annual convention of the National Retail Coal Merchants Association, in Grand Rapids, June 12, 13, and 14, Monday, Tuesday, and Wednesday, and who would welcome the opportunity of visiting with the operators and their salesmen in Chicago the latter half of the week by way of attending the meeting of the National Coal Association should it be held in Chicago June 14, 15, and 16, Wednesday, Thursday, and Friday. President Massey, of the National Retail Coal Merchants Association, when asked

what he thought of the idea, said it was splendid, and expressed confidence that hundreds of retailers would welcome such an opportunity.—*From N. C. A. Bulletin.*

The annual meeting of the Arizona Chapter, the American Mining Congress, was held at Phoenix, Ariz., in mid-December. Michael Curley, manager, New Cornelia Branch, the Phelps Dodge Corporation, was reelected governor. Other officers named were William Koerner, vice president and general manager of the Magma Copper Company, Superior, first vice governor, reelected; and R. W. Thomas, general manager of the Arizona Division, Nevada Consolidated Copper Company, Ray, second vice governor, replacing Walter Val De Camp, former general manager of the United Verde Copper Company. Reading of the minutes and other routine matters comprised the meeting subjects.

Those in attendance included P. G. Beckett, general manager of the Phelps Dodge Copper Company; F. W. MacLennan, general manager of the Miami Copper Company; T. H. O'Brien, general manager of the International Smelting Company; and Harry A. Clark, manager of the smelter division, Phelps Dodge Copper Queen Branch.

LEGISLATION

(*Continued from page* 16)

MINING CLAIMS. To suspend the statutory provision that $100 worth of labor be performed, or improvements aggregating such amount be made each year, as to all mining claims in the United States and Alaska during the fiscal year ending July 1, 1933. (House bills and joint resolution by Swing of California, Taylor of Colorado, Evans of Montana, Eaton of Colorado, and Smith of Idaho. Senate bills by Borah and Bratton. Reported favorably from House Committee on Mines and Mining.)

OIL DUTY. To increase import taxes on crude petroleum and derivatives from ½ cent a gallon to 2½ cents a gallon. (House Bill 13491—Cochran, referred to Ways and Means Committee.)

PHOSPHATES. To investigate by the Tariff Commission the differences in costs of production of phosphates and superphosphates. (Senate resolution by Walsh of Montana.)

RESCUE STATION. To provide a mine rescue station in Arizona. (S. 5073—Ashurst, referred to Mines and Mining Committee.)

REVENUE. To repeal the tax on checks, drafts, and orders for money under the Revenue Act of 1932. (H. R. 13033—Romjue, referred to Ways and Means Committee.)

SALES TAX. To assess tax of 1¾ percent of the wholesale price of every article sold in the United States by manufacturers, producers, or importers with a long list of exemptions, principally food and religious articles. (House Bill 12486—McLeod, referred to Ways and Means Committee.)

TRADE COMMISSION. To amend the Federal Trade Commission Act by defining unfair price competition. (Senate 5051—Copeland, referred to Interstate Commerce Committee.)

HAVE YOU HEARD—?

President Hoover in his message to the short session of Congress recommended a curtailment in the expenses of the Federal Government of $580,000,000.

The Copper and Brass Research Association will present at the Century of Progress Exposition, in Chicago, the remarkable development of the copper and brass industry in the last 100 years.

Gilbert Montague in a recent address said in advocating that something be done about the trust laws that "in 1931 a single railroad system had to file with all Government agencies 486,254 reports, comprising 532,720 pages.

The Brookmire Economic Service is of the opinion that the greatest obstacle to the increased use of anthracite lies in the high prices. It believes that wages, freight rates and fixed charges remain too high to allow operators to cut existing prices to levels which will increase use over competitive fuels. Any improvement in the situation must come from inside, with reduced prices, their report indicates.

Oil problem, according to W. C. Teagle, president, Standard Oil Co., of New Jersey, is merely matter of balancing amount of crude taken out of ground with volume that can be consumed.

Newspaper writers generally agree that unless all the signs fail there will be a special session of Congress, after March 4. In no other way can President-elect Roosevelt make good his campaign promises.

Roger W. Babson says that "Technocracy talk is all nonsense. All modern machinery which exists today, together with the labor of all abnormally employed men, is needed at this moment to produce per capita what this country was producing 20 years ago."

The adoption of the six-hour day by the railroads, according to a report to Congress by the Interstate Commerce Commission, would among other things increase the railroad operating expense about 14.6 percent, or nearly $630,000,000 yearly.

Leonard P. Ayers, vice president, Cleveland Trust Company, is not cheerful about the business outlook for 1933. He believes that our exports will decline; our wage trends will be lower; cost of living reduced; commercial failures greater; dividends will be lower, and that everything everywhere will be "less."

Saturday Evening Post inaugurates a new crusade to "Buy American," and the Trade Press asks pertinently enough: "With what?"

Eight to 10 states will consider the adoption of some form of unemployment insurance during the coming year, when 44 state legislatures are in session.

Jacob H. Hollander, professor of political economics at Johns Hopkins University, has published a new book on "Want and Plenty" in which he discusses the origin and consequences of our economic difficulties. He asks that "science rededicate itself to the solution of the major problem . . . Want and Plenty."

E. E. Loomis, president of the Lehigh Valley Railroad, in answering the proposals that the Government take over and operate the railroads said, "such proposals are not accompanied by definite proof that such political operation will either improve the quality of rail service, or decrease cost of its production."

House Judiciary Committee will conduct an investigation of the anti-trust laws, with a view to modification to permit natural resource industries to join in a fight against depressed conditions.

The World Economic Conference to be held at London, according to George F. Bauer, chairman of World Trade League, has marvelous opportunity for constructive service through discussion of tariff situation.

Fifty-one mining and land companies petitioned the Minnesota Tax Commission for a 20 percent reduction in assessed valuation of unmined iron ore. Their plea was rejected.

William Green, president, American Federation of Labor, says that the 30-hour week is absolutely necessary if industry is ever to take up the slack in unemployment.

Total National Income in 1932 is not expected to exceed $45,000,000,000.

Germany has presented us with a new film production based entirely upon a coal mine on fire. It is called "Kameradschaft."

The Crusaders, an anti-prohibition organization, recently announced that according to a recent survey the cost to the Government in enforcing prohibition over the past 12 years has been $34,000,000,000.

National Metal Exchange is likely to be merged with the Rubber, Silk, and Hide Exchange in one organization, to be known as Commodity Exchange, Inc.

The International Labor Office estimates that at the present time there are 35,000,000 unemployed in the world, with the resultant loss of over $20,000,000,000 in wages.

National export figures for the current year will be off about 21 percent, according to findings of the National Foreign Trade Council.

PERSONALS

Howard I. Young

President, American Zinc, Lead and Smelting Company, and newly elected Director of The American Mining Congress

Lucien Eaton, consulting engineer, and national chairman, Metals Branch, Standards Section, The American Mining Congress, has just been appointed as representative of that organization on the mining correlating committee of The American Standards Association.

Donald Gillies, Corrigan-McKinney Steel Company, was elected to the board of directors of The American Mining Congress at its annual members' meeting December 16.

Herbert Wilson Smith, attorney, in a recent statement said that two-thirds of the imports into the United States come in free of duty, and that when we look at the tariffs of other countries their schedules make us feel modest and unselfish.

Ralph M. Roosevelt, vice president, Eagle Picher Lead Company, spoke on the efforts to stabilize industry, before the group conference on this subject recently held by The American Mining Congress.

Robert E. Tally, vice president, United Verde Copper Company, is in the West again after spending several weeks in New York City.

R. L. Ireland, Jr., vice president, Hanna Coal Company, has been elected chairman, Coal Division, The American Mining Congress.

Hon. A. A. Ballantine, Under-Secretary of the Treasury, spoke before the annual meeting of The American Mining Congress on "Industry and the Federal Tax Problem."

Directors re-elected to the national board of The American Mining Congress at its annual meeting were: J. B. Putnam, Pickands Mather Company, Cleveland, Ohio; Clinton H. Crane, St. Joseph Lead Company, New York City; R. E. Tally, United Verde Copper Company, Clarkdale, Ariz.; L. S. Cates, Phelps Dodge Corporation, Arizona and New York City; A. E. Bendelari, Eagle Picher Lead Company, Cincinnati, Ohio; W. J. Jenkins, Consolidated Coal Co. of St. Louis.

Donald A. Callahan, president, Callahan Lead-Zinc Company, of Idaho, has been elected a director of The American Mining Congress. He recently returned to the West after a short visit in the East. He is a member of the Idaho State Senate, and is one of the few Republicans to escape the recent political upheaval.

T. J. Thomas, president, The Valier Coal Company, Chicago, Ill., has been appointed chairman of the bituminous group of the National Tax Committee of The American Mining Congress.

Frederick Mark Becket, president, Union Carbide and Carbon Research Laboratories, Inc., is the nominee for president, The American Institute of Mining and Metallurgical Engineers.

A. J. Musser, vice president, The Clearfield Bituminous Coal Corporation, has been elected first vice chairman of the Coal Division of The American Mining Congress.

L. S. Cates, president, Phelps Dodge Corporation, visited the properties of his company during late December.

G. D. Cowin, president, Bell & Zoller Coal and Mining Co., with Mrs. Cowin, were in Washington, December 15-16.

Bruce C. Yates, and Mrs. Yates, spent several days in the East in December, attending the meeting of The American Mining Congress. Mr. Yates is general manager of the Homestake Mining Company.

At the annual meeting of the Southern Appalachian Coal Operators Association, V. N. Hacker, Pruden Coal Company, was elected president.

Senator Key Pittman, of Nevada, presented the case of silver to the mining men at the annual meeting of The American Mining Congress.

D. D. Muir, vice president, United States Refining, Smelting & Mining Company, recently made a trip throughout the Northwest in the interest of the Western mining industry in the successor to Scott Turner, present head of the Bureau of Mines.

J. W. Galloway, of New York City, and David Williamson, manager of the West Virginia operations, have been appointed receivers for the Maryland Coal Company, of West Virginia.

C. H. Dorrence has been elected president of the Penn Anthracite Company, succeeding Harry N. Taylor.

Colonel Edward O'Toole has resigned as general superintendent of the United States Coal & Coke Company, and will make his headquarters at Pittsburgh after January 1. It is understood that he will give his attention entirely to the affairs of the American Coal Cleaning Company.

W. Val DeCamp has resigned as general manager for the United Verde Copper Company. He is the official representative of The American Mining Congress in the American Standards Association, developing operating standards for metal mining.

S. J. Dickenson, Mary Helen Coal Corporation, has been re-elected president, Harlan County Coal Operators Association.

D. C. Jackling has been awarded the John Fritz medal for 1932.

R. C. Allen, Ogleby Norton Company, presided at the Tax Session of the Group Conferences recently held by The American Mining Congress.

A. A. Ballantine, Under-Secretary of the Treasury, says that the great objective in taxation is to reduce the tax burden. In 1930 14½ cents of every dollar of national income went to governments, about 5 cents to the Federal, and 10 cents to state and local governments. The basic remedy for high taxes is to lower the cost of government.

Frank B. Dunbar, Mather Collieries Company, has been elected president of The Coal Mining Institute of America.

Hugh Morrow, president, Sloss-Sheffield Steel & Iron Company, was re-elected president of The Alabama Mining Institute.

Ralph M. Roosevelt, vice president, The Eagle Picher Lead Company, in speaking before the group conference conducted by The American Mining Congress, said, that he, with representatives of all other natural resource industries, had comprised a committee of that organization to study stabilization, and to try to work out some plan whereby industry may solve its problems, and that after 18 months of study the committee is not yet ready to make any recommendation as to what should be done.

Paul Weir

Vice President, Bell and Zoller Coal and Mining Company, and newly elected Director of The American Mining Congress

The National Safety Council recently elected **P. M. Arthur**, American Zinc Company, as vice-chairman in charge of engineering, of the executive committee of its mining section.

Walter H. Aldridge, president, Texas Gulf Sulphur Company, has been named the Saunders Medallist for 1932, by the directors of the American Institute of Mining Engineers.

F. S. Martin, president of the Coal Sales Corporation of Chicago, has been elected chairman of the board of the United Electric Coal Companies, filling the vacancy caused through the death of H. N. Taylor.

P. G. Beckett, general manager, Phelps Dodge Corporation, has returned to Arizona after several days' stay in New York City.

A. W. Robertson, chairman of the industrial rehabilitation committee, announces that industrial plants will shortly inaugurate projects that will involve expenditures of $105,266,429.

Dr. Julius Klein, Assistant Secretary of Commerce, says demand for toys for the Christmas trade was heavy, estimating we spent $170,000,000 for Christmas toys.

C. B. Huntress, National Coal Association, was principal speaker at the annual meeting of the West Virginia Coal Mining Institute, December 6.

BOOK REVIEWS

by

M. W. von BERNEWITZ

The A. I. M. E. Series:

1. CHOICE OF METHODS IN MINING AND METALLURGY, *by Pope Yeatman and others; 178 pages, index.*
2. MINERAL ECONOMICS: BROOKINGS LECTURES, *edited by F. G. Tryon and E. C. Eckel; 311 pages, index.*
3. A HISTORY OF AMERICAN MINING, *by T. A. Rickard; 419 pages, illustrated, index.*
4. THE EXAMINATION OF PROSPECTS, *by C. G. Gunther; second edition revised by R. C. Fleming; 220 pages, illustrated, index.*
5. TECHNICAL WRITING, *by T. A. Rickard; third edition, 337 pages, index.*

THESE FIVE BOOKS, the first four of which are published by the McGraw-Hill Book Company and the fifth one also by John Wiley & Sons, New York, and selling at $2.50 each, have been made possible through the Seeley W. Mudd Memorial Fund. Student members of the Institute receive their copies free. H. Foster Bain pertinently introduces the first, third, and fourth volumes; H. G. Moulton tells of the second; and T. A. Rickard explains the need for the fifth.

A short review of each follows:

1. If a student or engineer wishes to know how the problems at Chuquicamata and near Rancagua, Chile, were solved; the laboratory to 10,000-ton plants at Ajo and Inspiration, in Arizona; how to fight fire with steam shovels; how to refine and cast copper; how to use local experience in wholesale gold mining; how to accept responsibility; how to choose the correct geophysical methods for prospecting for oil; what is vision and human engineering; how to get coal down a mountainside; what is a suitable method of mining coal; and the financing of prospects and mines, respectively, Pope Yeatman, L. D. Ricketts, R. E. Tally, A. L. Walker, F. W. Bradley, W. H. Bassett, E. De Golyer, Eugene McAuliffe, H. N. Eavenson, N. G. Alford, and A. B. Parsons give the secrets of success.

2. F. G. Tryon and F. E. Berquist, J. W. Frey, D. F. Hewett, C. K. Leith, E. B. Swanson, C. E. Julihn, R. S. McBride, H. F. Bain, E. C. Eckel, J. W. Furness, T. T. Read, Leonard Logan, G. F. Laughlin, and J. R. Finlay are the lecturers on mineral economics under the auspices of the Brookings Institution, Washington, D. C. (The founder of that Institution, R. S. Brookings, died in November, 1932.) These lectures cover such topics as geographic distribution of world mineral production, cycles of mineral production, mineral exploration and discovery, copper, fertilizers and synthetic substitutes, scrap metals, tariffs, taxation, precious metals, and the future value of mineral property.

3. As in "Man and Metals" (McGraw-Hill Book Company, 1932), in which Rickard traces world history as affected by minerals and metals, in "A History of American Mining" he has done a good job. With 1497 as the earliest year mentioned, when Cabot saw copper in Newfoundland, we read a short chapter, "The Beginning," which brings us to the enormous outputs of 1929. Then T. A. carries us back and along to the gold discoveries of the Eastern States and California; then in the Yukon; the Comstock; Colorado; lead in the Mississippi Valley; copper in Utah, Arizona, Michigan, and Montana; gold in South Dakota; and lead in Idaho. We recognize more or less of these writings, also the chapters on low-cost gold mining, the Bunker Hill enterprise, the great diamond hoax, and the flotation process in whose patent litigation and technology Rickard did great service for the mining people.

4. C. G. Gunther (deceased) was associated with Seeley W. Mudd in the finding and development of ore deposits, hence the inclusion (and revision) of his "The Examination of Prospects" among this series is appropriate. It is a practical geology and covers mining examinations, structural geology, primary and secondary ores and deposits, alteration of wall-rocks and alterations by surface agencies, and outcrops.

5. "Technical Writing" is too well known to need analysis. This is its third edition. Rickard's insistence on good style, starting a generation ago, has been a big factor in improving technical writing everywhere. Many engineers have said the following to the reviewer: "I don't agree with him on this and/or that, and I don't quite follow him there, but in general his ideas are good, and his style is worth following." Hundreds of examples of poor writing are given, and how they should have been stated. Rickard's work will influence many in the future.

ELEMENTS OF MINING, *by G. J. Young. Third edition, 707 pages, illustrated, index. McGraw-Hill Book Company, New York, 1932. Price, $6.*

EVIDENTLY THERE HAS been a good demand for "Elements of Mining," now in its third edition. The first and second editions appeared in 1916 and 1923. The book may be considered a practical working tool for metal and nonmetal mining men, and if anyone desires more details than given, he can read the originals of the many references which follow each of the 19 chapters. We note the omission of several recent reports which could have been inserted and so give a wider scope to the bibliographies. In this review we have taken the major heads (combining some of them) in the index and then read the chapters:

Accidents and Miners' Diseases.—Thirty pages cover these important problems fairly well. The author recognizes their growing importance to the engineer and the public, and credits State mine inspectors, the United States Bureau of Mines, mining companies, and State industrial commissions. The chapter included the selection of officials and foremen; selection of workers and their training and discipline; safety devices, inspection, and bonuses; coal-mine explosions and their prevention (the terms methane and gassy are preferable to marsh gas and gaseous); fires in metal mines and what to do; a brief section on first aid and respiratory apparatus (a sketch of one of these could have been omitted and a gas mask shown); and something on lung troubles and diseases arising from lack of sanitation. A reference to self-preservation of life by barricading against fire (and explosion) gases would have added value to the chapter, as in Miner's Circular 25 of the Bureau of Mines. Reference is made to first-aid training by the Red Cross, but this has been insignificant compared with the training of 650,000 persons and distribution of 1,000,000 copies of the manual of the Bureau of Mines.

Accounts.—Mine accounting is fairly complex. No uniform system is applicable to all cases. Simplicity should be a feature, if practicable. Labor timekeeping, supplies, costs, sales, cash, and depreciation are part of any system. We may group mine organization and operation with accounting because they are closely related.

Air.—The chapter on ventilation, which includes illumination (stationary lighting and hand lamps, including the flame safety and electric cap lamp), tells what gases are liberated in mines from rocks, workmen, lamps, and blasting; dust in the air current; temperature and humidity; and how ventilation may be effected, including air-conditioning for hot mines.

Alluvial Mining.—Of late a great deal has been written on alluvial or placer mining, and within the limits of 44 pages, layouts are given for operating several types of deposits and the methods for saving the gold.

Blasting.—Under this head we can include three chapters—drilling for blasting purposes, rock-breaking, and blasting rock; they are inter-related. Surface and underground drills and their accessories as bits and sharpeners, the classes of explosives used, and how to store and handle them, and types of rounds for shafts and drifts, with costs, are covered.

Development.—Development has for its fundamental purposes the delineation of an orebody and its preparation for working. More or less every deposit presents its own prob-

(*Continued on page* 34)

MODERN MINING EQUIPMENT

The New Symons Short Head Fine Reduction Crusher

A NEW DEVELOPMENT of the Symons Cone Crusher, and one which marks another radical step toward much finer crushing, is the new Short Head Fine Reduction Crusher now offered by the Nordberg Manufacturing Company of Milwaukee, Wisconsin. This new crusher has much in common in appearance and principle of operation with the Symons Standard Cone, introduced a few years ago.

Both crushers have the same wide travel and rapid gyration of the head, and the same big discharge opening created at the bottom of the head for the rapid exit of the crushed fines. The same threaded arrangement of the bowl for changing the size of product and the same system of pressure lubrication is used. The principle changes are the shape of the crushing cavity and a different design of head and bowl. With the shortened head, the diameter of the intake opening at the top of the crushing cavity has been greatly increased. This greater area allows much of the initial crushing to be done at the top of the cavity. The steeper angle allows faster travel through the cavity and is an important factor in securing the big capacity which this crusher has. The parallel zone at the bottom has also been made much longer, assuring of proper sizing.

With its big capacity of fine product, the Short Head Cone Crusher is of particular interest to those confronted with the problem of fine crushing and still maintaining plant capacity.

In the mining industry an especially fine product is wanted for mill feed. With this machine set to produce a minus ¼-inch product, it replaces other equipment formerly required and does it with increased tonnage and with lowered crushing and ultimate milling costs. It also makes possible a higher recovery. Crushers of this type are now in service crushing gold, copper and zinc ores.

These crushers are built in sizes having 3, 4, 5½ and 7 foot diameter cones, giving a range in capacity that meets the need of crushing plants large or small.

Dual Drive for Shaker Conveyors

THE GERMAN FIRM of Eickhoff has recently introduced a dual drive for shaker conveyors for which high economy is claimed. It consists of two compressed air engines mounted on either side of the conveyor. Due to the special valve gear incorporated in these engines, they run at the same tempo, and are secured to a common frame. The engines can be arranged to run double-acting or to act on one side only, the conveyor running above the frame between the two engines. A special attachment bridge enables the dual drive to be fitted at any desired point on the conveyor, the bridge being bolted to the connecting lugs of two conveyor joints.

The main advantage of dual drive is that the power is applied to the longitudinal axis of the conveyor, so that no additional vertical or horizontal forces act on it and impair or curtail its service life. As both engines are mounted on a common frame, they are easy to install or shift, these jobs taking no longer than for a single drive. Some tests carried out show that, with both methods of working (single or double sided), the dual drive will operate a conveyor of twice the length for the same tonnage conveyed.

Proper Operating Angle of Great Importance in Operation of Vibrating Screens

IN ORDER TO ATTAIN the maximum degree of efficiency from any Vibrating Screen, it is of great importance to see that they are installed on the proper operating angle. Very often when installing such machines errors are made in estimating the pitch, with the result that the full efficiency of the Vibrating Screen is not attained.

Much of the power saving effected by Vibrators, over that of Shaker or Rotary Screens, is due to the fact that the gravitation principle is used to a great extent in moving the material over the screening surface. From long acquaintance with installations of old style Shaker or Rotary Screens, the tendency of the average operator is to install Vibrators on too low a pitch.

In the accompanying illustration, a device is shown which is attached in a prominent position on the side members of all late model UNIVERSAL Vibrating Screens. It has been named "ANGLE-O-METER," by the Universal Vibrating Screen Company of Racine, Wisconsin, as their engineers designed it for service on all of the various sizes and types of screens they manufacture.

When a UNIVERSAL Screen is installed, one end of the unit is raised until the pointer, or pendulum, reaches the recommended degree of pitch, or operating angle, and in this way all errors of installation, with a resultant loss of screening efficiency, are eliminated.

Silverlink Roller Chain Announced by Link-Belt

AN ANNOUNCEMENT is made by Link-Belt Company, Indianapolis, Ind., of a Roller Chain to be known by the trade name Link-Belt Silverlink. Although the chain is not made up with silver links, its side bars are especially treated to assist in resisting corrosion, and this treatment gives them the appearance of silver. Silverlink Roller Chain is made in all sizes from ⅜-inch to 2½-inch pitch, and in single or multiple widths. It is available with wheels, for any horsepower, also with conveying attachment links in wide variety in sizes up to 225 H. P., in speed ratios of 1 to 1 up to 8 to 1. The construction features of Silverlink chain are enumerated as follows:

> (1) Sidebars of alloy rolled steel heat-treated for strength and toughness, and especially treated to resist corrosion. (2) Nickel steel case-hardened pins, detachable type with cotter, or furnished riveted. (3) Solid steel case-hardened bushings. (4) Alloy steel heat-treated rollers. The Link-Belt curled roller is made from strip steel having a strong fibrous structure, with the fiber running around instead of across the roller, so as to give the greatest strength and resilience to the roller (where the greatest wear takes place), and offer the maximum resistance to shock.

New I-R Air-Operated Portable Sump Pump

A NEW PORTABLE, air-operated sump pump intended for use by mines, refineries, general contractors, public utility companies and other fields of service has been developed by Ingersoll-Rand Co., 11 Broadway, New York. It consists of an open-impeller type centrifugal pump driven by a "multi-vane" type air motor and both enclosed in a one-piece housing. The unit weighs 50 pounds, and is designated as sump pump size 25.

Angle Compound Compressors Featured in New Catalog

ADVANTAGES and new developments in Angle Compound Air Compressor design are featured in a new 32-page catalog of the Sullivan Machinery Company, just issued. This catalog is 8½ x 11 inches in size, fully illustrated, with many pictures of different types of Angle Compound Compressors and many installations, with a special modernistic

ADVERTISING INDEX

cover design in three colors. The ready adaptation of this particular compressor type to direct motor drive is stressed in this new catalog. Particular attention is also devoted to partial capacity operation, to the adaptability of the "twin" units and to the power economies involved in the manufacturer's "multi-step" control. Automatic controls of several types are described. Copies will be sent on request to Sullivan Machinery Company, 400 North Michigan Avenue, Chicago.

Diesel Electrics Speed Up Plant Transportation

A 70-TON Westinghouse Diesel electric locomotive has been placed in service at the Ecorse plant of the Great Lakes Steel Corporation. In this modern plant the entire transportation work is handled by Diesel electrics, which are used for charging, hot metal and slag handling, and general switching and distribution work.

BOOK REVIEWS

(*Continued from page* 32)

lems, and in Chapter XIV are layouts for several types of orebodies, shaft sinking, tunneling and driving, and costs.

Drainage.—The water plane in mines varies according to topography, geographic situation, and rock formation. Some mines and districts have much water, which is an expense whichever way it is handled. The drainage of workings, pump types and the mechanics of pumping, air-lifts and eductors, with costs, and the problem of unwatering flooded workings are well covered.

Geophysics.—This science occupies most of the chapter on prospecting, and the author says that the results of physical measurements are of great value to the mining geologist and have made material contribution to the discovery of mineral deposits. Geophysics must be relied upon to determine the approximate position of metalliferous deposits close to the surface, but not outcropping. The chapter on examination (and sampling) of mineral deposits may be grouped with prospecting.

Haulage.—The movement of ore, waste, and supplies comes under transportation and hoisting. Here we read of compressed-air and storage-battery locomotives, the hazards of gasoline locomotives and trolley wires, car types, rail weights, cost of haulage, chute gates, a brief note on scrapers, and hoists and dumps.

Underground Mining Methods.—Coal and metal mines are covered in underground methods. These are listed, defined, and described as adapted to deposits of coal, copper, gold, iron, lead, salt, and zinc, with costs. The selection of a method suitable to the deposit is explained.

Open-Pit Mining.—This form of excavation at coal, copper, and iron mines, and at quarries (including sand and gravel pits not mentioned), is so important in the extraction of low-priced materials that chapter 12 will be found of value. The illustrations are helpful. The section on dredges should have been in the next chapter on alluvial mining.

Support of Mine Workings.—Two chapters review the support of mine workings, an important problem. The strength and porosity of rock masses and their disturbance by the removal of ore and waste, and, of course, the depth that this is done, are the main factors which necessitate the use of supports. Various types of wood and steel timbering, also concreting and guniting, in any class of opening and other pillar support are given practical attention.

New Purox Welding Torch Announced

THE LINDE AIR PRODUCTS COMPANY, 30 East 42nd Street, New York, N. Y., has announced the addition of a new welding torch to its Purox line of oxy-acetylene apparatus. Designated as the Purox No. 28 Welding Torch, this new torch has the same wide range of usefulness and the same high efficiency and economical gas consumption as the Purox No. 20 Torch, but is somewhat different in design. Its utility is such that it will handle heavy-duty work as easily as the average job.

Stephens-Adamson to Manufacture New Conveyor-Elevator

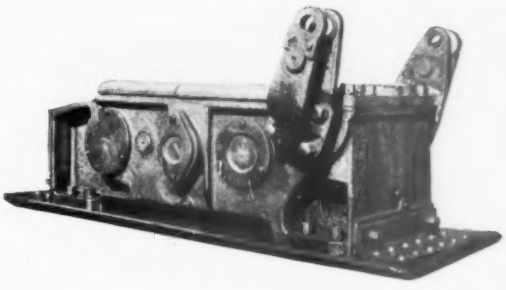
STEPHENS-ADAMSON MFG. CO., of Aurora, Ill., have acquired the United States right to manufacture and distribute the unique English REDLER conveyor which is claimed to convey horizontally, vertically, up inclines and even around corners. A 4-page descriptive folder has been issued to explain the novel principle upon which this new conveyor operates.

There is a Goodman Drive for Every Shaker Conveyor Requirement

Standard or Permissible Construction—Capacities: 5 to 120 Tons Per Hour

OSCO

Type D. 5-10 Hp.
A little drive with a big kick.

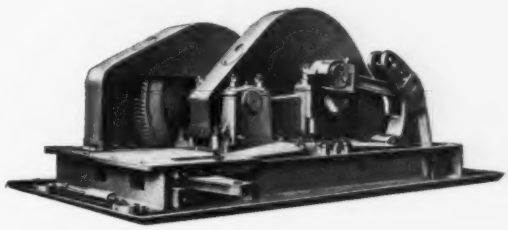


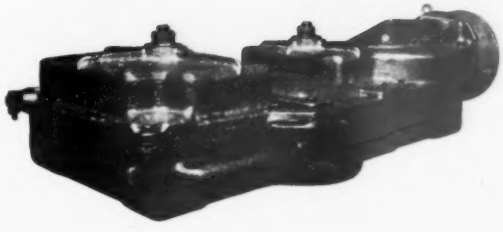
Type B. 10-20 Hp.
A medium capacity drive. Underneath or end connection.

OSCO

OSCO

Type A. 20-30 Hp.
A large capacity drive. Underneath or side connection.



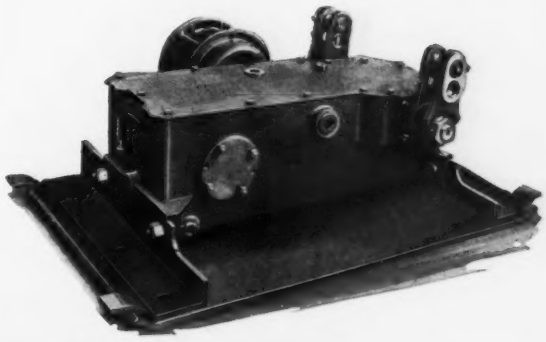


Type C. 20-30 Hp.
A powerful drive with great transport ability. Stroke completely reversible and variable from 1 to 11 inches.

OSCO

GOODMAN CHICAGO

Type E. 5 to 10 Hp.
A small, powerful and efficient drive with all of the latest improvements. Especially valuable in handling anthracite coal.



Complete Shaker Conveyor Equipment

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HALSTED ST. at 48TH.
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Locomotives - Loaders - Coal Cutters

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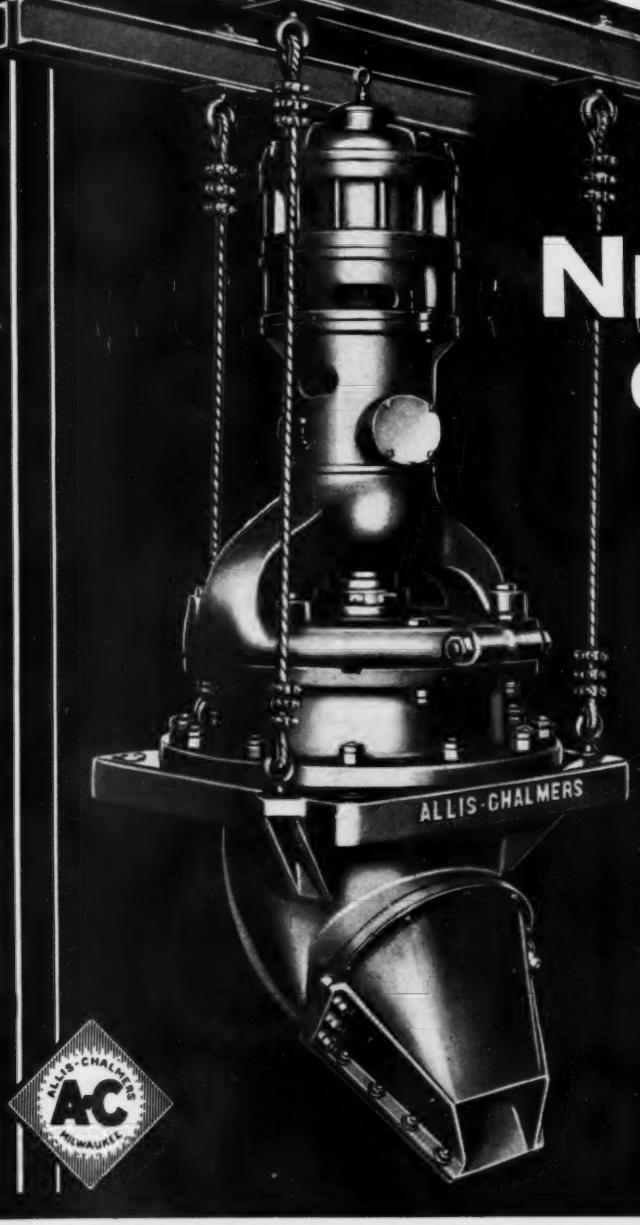
(59)

CRUSH

WITH

NEWHOUSE CRUSHERS



YOU will like the short, rapid crushing action of this crusher and the grading of the product. The method of suspending the crusher from the framework of the building eliminates expensive foundations and permits installing the crusher in the most advantageous locations. It is a simple crusher with a direct connected motor. There are no gears, pinions, pulleys, or belts. The few working parts are lubricated through a positive oiling system that includes a filtering and cooling unit.

Bulletin 1469-B tells more about the Newhouse Crusher. Just write for it.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee